PRELIMINARY ASSESSMENT

V I P CLEANERS

AKA: MORRISTOWN TIRE

MORRISTOWN, MORRIS COUNTY

EPA ID NO. NJD 982744740

New Jersey Department of Environmental Protection and Energy
Division of Responsible Party Site Remediation
Bureau of Field Operations - Site Assessment Section

V I P CLEANERS
AKA: MORRISTOWN TIRE
89 MORRIS STREET
MORRISTOWN, MORRIS COUNTY, NEW JERSEY
EPA ID NO. NJD982744740

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NARRATIVE

PRELIMINARY ASSESSMENT REPORT

PART I: GENERAL INFORMATION

Site Name: V I P Cleaners
Aka: Morristown Tire
Address: 89 Morris Street
Municipality: Morristown **State:** New Jersey **Zip Code:** 07960
County: Morris
EPA ID No.: NJD982744740
Block: 4801 **Lot(s):** 11
Latitude: 40° 47′ 47" **Longitude:** 74° 28′ 40"
Acreage: <1 **SIC Code:** 7216

Current Owner: P. Austin and W. Austin
Mailing Address: P.O. Box 29
City: Morris Plains **State:** New Jersey **Zip Code:** 07950
Telephone No.: 201-267-8435

Current Operator: Sonny Din
Mailing Address: 89 Morris Street
City: Morristown **State:** New Jersey **Zip Code:** 07960
Telephone No.: 201-539-2922

Owner/Operator History:

NAME	OPERATOR/ OWNER	DATES FROM	TO
P. Austin, W. Austin	owner	1987	present
VIP Cleaners	operator	1989	present
The Finishing Touch	operator	1987	present
Isabel H. Austin	owner	1970	1987
William B. Austin	owner	1935 1942 1948	1970
Caroline Laundry	operator	unknown	1970
Sarah J. Austin	owner	unknown	1935
Philip W. Drake Doris S. Drake	owners	unknown	1942
Serena Salmon Ira P. Salmon	owners	unknown	1948

Surrounding Land Use (zoning, adjacent properties):

Land use in the vicinity of the VIP Cleaners site is primarily commercial and residential properties.

Distance to Nearest Residence: 500 feet
Direction: east
Population Density (residents per square mile): 5,510

PART II: SITE OPERATIONS

Discuss all current and past operations at the site.

A review of aerial photographs indicate that the VIP Cleaners site was vacant until at least 1940. The existing building was evident in 1951 photographs but was not present in 1940 photographs indicating that the building was built within this time frame. Mr. Peter Austin indicated, during a December 1993 phone interview, that he had operated a Caroline Cleaners at the site until 1970 when the building was leased in parts to different stores and vendors. Operations of Caroline Cleaners dealt primarily with common laundering of clothes and other materials. Only a small portion of the operations involved dry cleaning. Mr. Austin indicated that dry cleaning chemicals were reused repeatedly and that the only loss of product was to the atmosphere via volatilization. Reportedly the site has always been on sanitary sewer and no floor drains existed at the site until they were installed by tenant Curt Bush, owner of The Finishing Touch car detailing operation approximately 6 years ago. This was verified by inspection of the Finishing Touch building after an inspection of the VIP Cleaners building.
(Attachment I)

Since the building was divided for lease in 1970, several different operations have been conducted at the site. These include a hospital laundry, lawn mower repair shop, hair salon, computer shop, auto detailing and audio, garden center and dry cleaners.
(Attachment H,I)

An inspection of the site was conducted by NJDEPE, Site Assessment personnel on December 13, 1993. At this time the current dry cleaning operation, VIP Cleaners, and the Finishing Touch auto detailing building were inspected. The entire interior of both of these buildings building were inspected and did not reveal any drains, dry wells or other pathways to ground water. Site representative of VIP Cleaners, Sonny Din, indicated that dry cleaning operations ceased at the site approximately 1 1/2 years ago and that only small scale cleaning of spots on garments is conducted on site. The VIP Cleaners store acts primarily as a drop off and pick up shop for clothes that are cleaned at other locations. The Finishing Touch details autos and installs audio equipment. No hazardous materials are used by the Finishing Touch operation.
(Attachment I)

The exterior of the building was also conducted and no areas of concern were observed. Current operations at the site include VIP Cleaners, The Finishing Touch auto detailing and Garden on the Green garden center.
(Attachments H,I)

PART III: PERMITS

A. NJPDES

Number	Discharge Activity	Date Issued	Expiration Date	Formation or Body of Water Discharged To
N/A				

B. New Jersey Air Pollution Control Certificates

Plant ID No.: L2527
No. of Certificates: 1 (094029)
Equipment Permitted: Dry Cleaning Machine

C. BUST Registration

Registration No.: 0228873
No. of Tanks: 1

Tank No.	Capacity (gallons)	Contents of Tank	Integrity
001	7,000	#6 Heating oil	Removed 2/92

(Attachment A)

D. Other Permits

Agency Issuing Permit	Type of Permit	Permit No.	Date Issued	Expiration Date
N/A				

PART IV: GROUND WATER ROUTE

A. HYDROGEOLOGY

Describe geologic formations and aquifer(s) of concern. Include interconnections, confining layers, discontinuities, composition and permeability.

Ground water in Morris County occurs in the voids in unconsolidated sediments and fractures in the underlying bedrock. Crystalline rocks of Precambrian age underlie almost the entire northwestern two-thirds of the county. They are primarily granitoid gneisses and pegmatites but include schists, crystalline limestone or marble, magnetite and a few small quartz veins. In most of the county Precambrian rocks are the only source of ground water. Quaternary rocks comprise the unconsolidated surficial deposits which mantle the bedrock surface. These deposits consist of clay, silt, sand, gravel and boulders. These stratified drift deposits form the mineral framework for the most developed ground water reservoir in the county.

Depth to aquifer of concern: <20 feet
Thickness of aquifer: unknown
Direction of ground water flow: unknown
Karst (Y/N): No
Wellhead Protection Area (Y/N): No **Distance:** N/A
(Attachments A,D)

B. MONITORING WELL INFORMATION

Well No.	Screen Depth(feet)	Formation	Location
MW-1	12-22	Glacial deposits	See site map

Identify the upgradient well(s): N/A
(Attachment A)

Briefly discuss why the monitoring wells were installed and describe contaminants identified in the monitoring wells. Include Well No., sampling date, sampling agency or company, contaminant levels and cleanup standards.

Soil contamination was discovered in the excavation of a 7,000-gallon #6 heating oil tank which was removed from the site in February 13, 1992. Subsequently, a monitoring well was installed in the vicinity of the tank's previous location to determine if the tank had any impact on ground water. On September 24, 1992 representatives of the PMK Group of Union, New Jersey collected ground water samples from the subject well. The sample results indicate that trichloroethene, tetrachloroethene and trans-1,2-dichloroethene were present in the ground water at concentrations of 58, 510 and 69 parts per billion (ppb), respectively. The

NJDEPE Ground Water Quality Standards for trichloroethene, tetrachloroethene and trans-1,2-dichloroethene are 1, 1 and 100 ppb, respectively. In the analysis for base/neutral compounds, tetrachloroethene was identified to be present at a concentration of 99 ppb. Three additional unidentified base/neutral compounds were detected in concentrations ranging from 6 to 10 ppb.
(Attachment B)

C. POTABLE WELL INFORMATION

Distance to nearest potable well: 0.2 mile

Identify all public supply wells within 4 miles of the site:

Water Company	Distance from site (miles)	Depth (feet)	Formation
Southeast Morris County MUA	0.9	265	Brunswick
Southeast Morris County MUA	1.1-1.8 (5 wells)	58-496	Quaternary Dep. & Brunswick
Southeast Morris County MUA	2.1-2.9 (6 wells)	60-210	Quaternary Dep. & Brunswick
Southeast Morris County MUA	3.0-3.8 (3 wells)	60-124	Quaternary Dep.
Parsippany-Troy Hills	3.5 (2 wells)	87-90	Quaternary Dep.
Madison Borough	3.7	160	Quaternary Dep.
Florham Park Borough (Map 5)	3.8	105-139	Quaternary Dep.

Discuss private potable well use within 4 miles of the site. Include depth, formation and distance, if available.

A search of private wells was conducted by the PMK Group of Union, New Jersey during the underground tank removal and subsequent discharge investigation. Three domestic wells were identified within 1 mile of the site. The closest of these is approximately 0.2 mile south of the facility, screened in the Brunswick Formation at 320 feet.
(Attachment C)

Distance from site (miles)	Population utilizing ground water
0 - 1/4	3
1/4 - 1/2	50
1/2 - 1	4,075
1 - 2	20,375
2 - 3	24,450
3 - 4	29,145

(Attachment C,F)

Discuss any evidence of contaminated drinking water or wells closed due to contamination.

Ground water contamination has been identified in the on-site monitoring well; however, no evidence exists to link this site with any local well closures.
(Attachment B)

Identify industrial/irrigational wells within the vicinity of the site. Include depth, formation, distance and direction, if available.

The closest industrial/irrigational well is located approximately 0.25 mile east of the site. This well is 298 feet deep, is screened in the Brunswick Formation, and is used by the Powers Motor Company for irrigational purposes.
(Map 5)

D. POTENTIAL

Discuss the potential for ground water contamination, including any other information concerning the ground water contamination route.

During the December 13, 1993 Pre-Sampling Assessment, no floor drains, septic or other direct pathway to ground water was discovered at the site. The site is entirely paved which should prevent contamination to ground water in the event of a spill or release. No evidence was discovered to link this site with the associated ground water contamination below the site.
(Attachment I)

PART V: SURFACE WATER ROUTE

A. SURFACE WATER

Does a migration pathway to surface water exist (Y/N): No
Flood plain: >500 year (Map 7) **Slope:** <3% (Map 1)

Does contaminated ground water discharge to surface water (Y/N): No

Identify known or potentially contaminated surface water bodies. Follow the pathway of the surface water and indicate all adjoining bodies of water along a route of 15 stream miles.

Surface Water Body	Distance from site	Flow(cfs)	Usage(s)

No surface water pathway was identified for this site. (Map 1)

Identify drinking water intakes within 15 miles downstream (or upstream in tidal areas) of the site. For each intake identify the distance from the point of surface water entry, the name of the supplier and population served.

No surface water pathway was identified for this site. (Map 1)

Briefly discuss surface water or sediment sampling conducted in relation to the site. Discuss visual observations if analytical data is not available (include date of observation). Include surface water body, sampling date, sampling agency or company, contaminant.

No surface water pathway was identified for this site, therefore no sampling of sediments or surface water has occured.

Discuss the potential for surface water contamination, include any additional information concerning the surface water route.

The V I P Cleaners site is entirely paved and all operations take place indoors. Contaminated runoff from this site is unlikely. (Attachment I)

B. SENSITIVE ENVIRONMENTS

Identify all sensitive environments, including wetlands, along the 15 stream-mile pathway from the site:

Environment Type	Surface Water Body	Flow (cfs)

No surface water pathway was identified for this site. (Map 1)

PART VI: AIR ROUTE

Discuss observed or potential air release.

An air permit has been issued to VIP Cleaners for a dry cleaning machine. Currently, no cleaning of materials is conducted on-site. The potential for an air release at this site is minimal.
(Attachment I)

Populations that reside within 4 miles of the site.

Distance (miles)	Population
0 - 1/4	1,080
1/4 - 1/2	3,245
1/2 - 1	5,875
1 - 2	13,285
2 - 3	6,260
3 - 4	29,145

(Attachment J)

Identify sensitive environments and wetland acreage within 1/2 mile of the site.

No sensitive environments or wetland acreage was identified within 0.5 mile of the site.
(Map 6)

PART VII: SOIL EXPOSURE

Describe soil type. Include soil series, makeup of the soil and permeability of the soil.

The United States Department of Agriculture, Soil Conservation Service lists the soils below the site as Urban land series-Riverhead complex. The Urban land series are areas that have been cut or reworked to the extent that the original profile cannot be recognized. The characteristics of the material are variable. The Riverhead complex typically consists of well-drained, nearly level to strongly sloping sandy and gravelly soils. Slopes range from 0 to 20 percent, but are typically 5 to 12 percent. The underlying material is loose, unweathered, stratified and sorted sand and gravel outwash, mostly of granitic material that contains some shale, sandstone, quartzite and conglomerate. Coarse fragments are mainly gravel and cobbles, but in a few places there are stones and boulders. Permeability is rapid and runoff is moderate.
(Attachment G)

Briefly discuss contaminants identified in the soil. Include sampling date, sampling agency or company, sample locations, depth and contaminant level.

On February 20 and 21, 1992, eight soil samples were collected by the PMK Group of Union, New Jersey within the excavation of the 7,000-gallon underground storage tank which was removed on Februaury 10, 1992. Seven of the samples were collected at 9.5 feet below normal grade at various locations of the excavation and analyzed for petroleum hydrocarbons (TPHC). Two of the samples displayed contamination at 74 and 875 parts per million (ppm) TPHC. The sample with the highest TPHC concentration (875 ppm) was sampled again on February 21, 1992, one foot below the original sample at 10.5 feet, and analyzed for TPHC and base/neutral compounds. This sample revealed TPHC contamination at 210 ppm with no base/neutral compounds detected.
(Attachment B)

If no soil sampling has been conducted, discuss areas of potentially contaminated soil, areas that are visually contaminated or results from soil gas surveys.

The entire site was paved at the time of inspection. No soil gas surveys could be conducted at this time. No areas of stained soil were observed.
(Attachment I)

Number of people that occupy residences or attend school or day care on or within 200 feet of the site: 0
Number of workers on or within 200 feet of the site: 20

Does a subsurface gas threat exist? (Y/N): No
If so, discuss the threat (include if in homes or occupied building).

PART VIII: DIRECT CONTACT

Describe accessibility of the site (fencing, site security, evidence of unauthorized entry).

The VIP Cleaners site is not fenced; however, operations take place indoors which would prevent a direct contact threat by unauthorized personnel.

Number of on-site employees: 10

PART IX: FIRE AND EXPLOSION

Discuss all incidents on site which have involved a fire or explosion. Indicate the date of the incident and the materials involved.

No incidents of fire were discovered during the file search.

Discuss site conditions which indicate a potential exists for fire or explosion (reactivity, incompatibility, ignitability, storage practices, container condition).

Flammable materials are used at the site; however, they are used in relatively small quantities and are not stored in a manner which would create an explosion or fire threat.

PART X: ADDITIONAL CONSIDERATIONS

Discuss evidence of wildlife or vegetation that has been or could be potentially impacted by on-site operations. Include areas exhibiting stressed vegetation or damage to wildlife.

Operations at this site do not appear to be causing adverse affects on surrounding wildlife or vegetation.

Determine if a contaminant on site displays bioaccumulative properties. Name all bioaccumulative substances that may impact the food chain.

Contaminants detected at the V I P Cleaners site are not bioaccumulative in nature.

Discuss observed or potential damage to off-site property. Consider migration routes from the site to an off-site property via soil, air or runoff.

Operations conducted at the VIP Cleaners site do not pose a threat to surrounding properties.

PART XI: PREVIOUS OR ONGOING REMEDIAL ACTIONS

Discuss for each media all previous and ongoing remedial activities at the site. Include why initiated, type of action, date and present status.

In February 1992 a 7,000-gallon underground storage tank of #6 fuel oil was removed by Anco Environmental Contracting Inc. under the supervision of the PMK Group of Union, New Jersey. As a result of the tank removal, approximately 130 tons of contaminated soil were

removed from the excavation. Subsequently, a monitoring well was installed to determine if ground water was impacted by the tank. Sample results did not indicate a release to ground water had occured; however, tetrachloroethene (PCE), trichloroethene (TCE) and trans-1,2-dichloroethene were detected in the ground water. Ground Water Quality Standards were exceeded for PCE and TCE. It is possible that historic dry cleaning operations may have contributed to this ground water contamination. Currently, this case is closed within the NJDEPE, Bureau of Underground Storage Tanks.
(Attachments A,B)

PART XII: ENFORCEMENT ACTIONS

No enforcement actions were discovered for the VIP Cleaners site during the file search.

PART XIII: CONCLUSIONS AND RECOMMENDATIONS

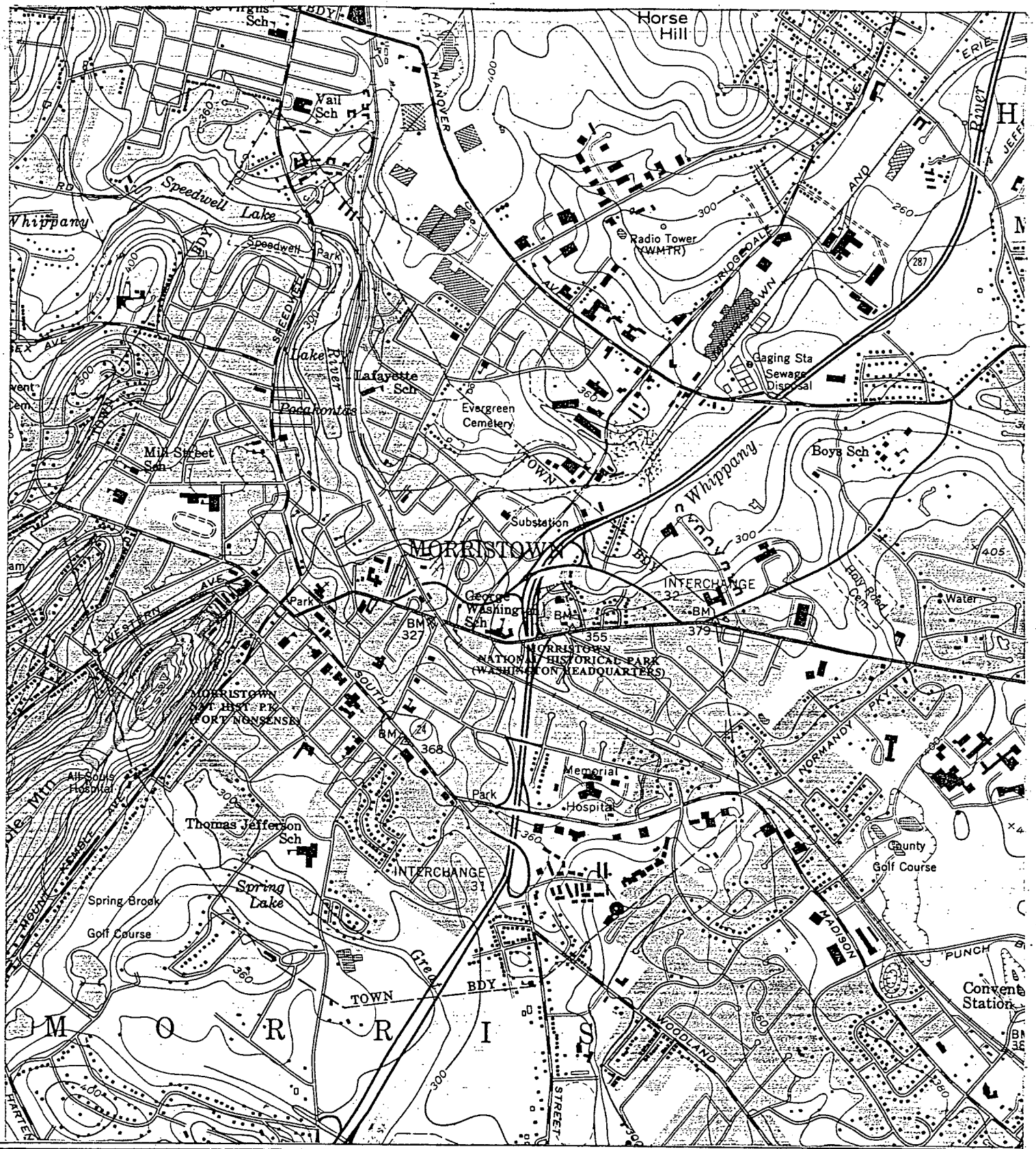
Historic and recent operations at this site have used chlorinated solvents; however, no evidence was discovered during the file search and subsequent inspection of the site to link it with the discovered ground water contamination. A review of historic aerial photographs found no suspect areas at the site. No pathway to ground water was discovered. It is recommended that additional monitoring wells be installed both upgradient and downgradient to determine if the site is a source of ground water contamination.

Submitted by: David Dibblee
Title: HSMS IV
NJDEPE, Bureau of Field Operations - Site Assessment Section
Date: December 20, 1993

PART XIV: POTENTIALLY RESPONSIBLE PARTIES

NAME	OWNER/OPERATOR/ KNOWN DISCHARGER	CURRENT ADDRESS
Caroline Laundry	operator	c/o Peter Austin P.O. Box 29 Morris Plains, New Jersey 07950

MAPS



SCALE 1:24000

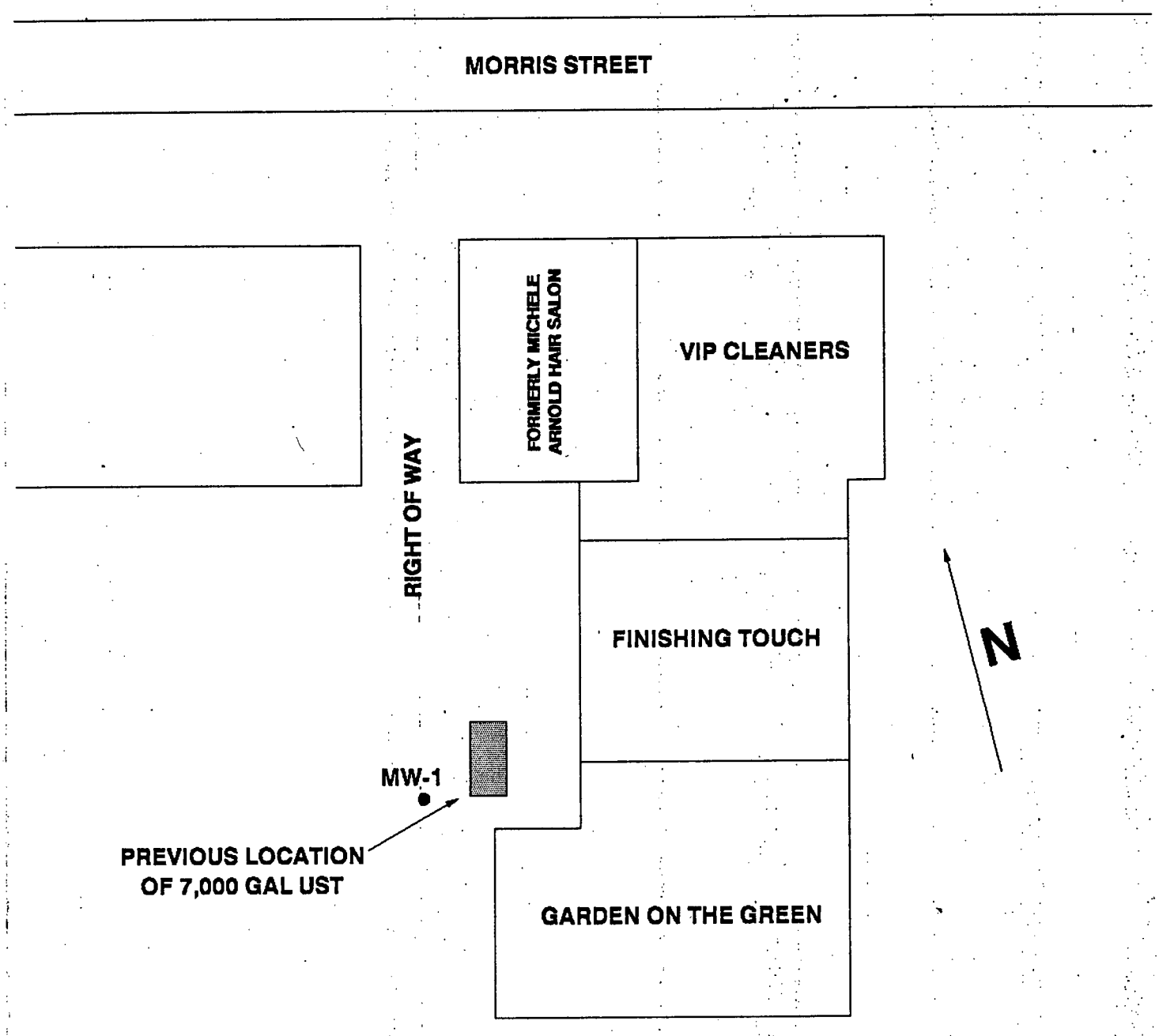
1 ½ 0 1 MILE

1000 0 1000 2000 3000 4000 5000 6000 7000 FEET

1 5 0 1 KILOMETER

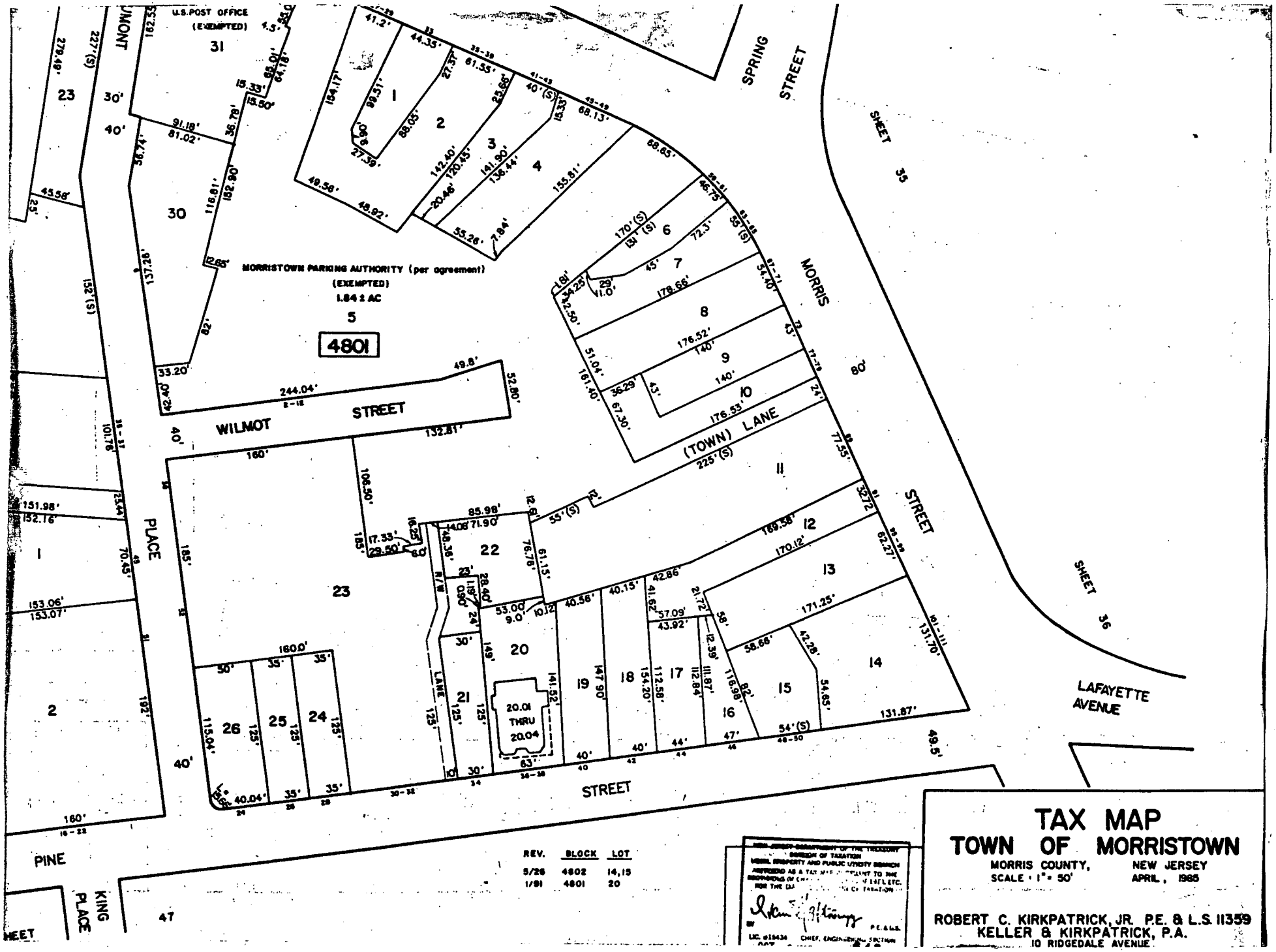
CONTOUR INTERVAL 20 FEET
DATUM IS MEAN SEA LEVEL

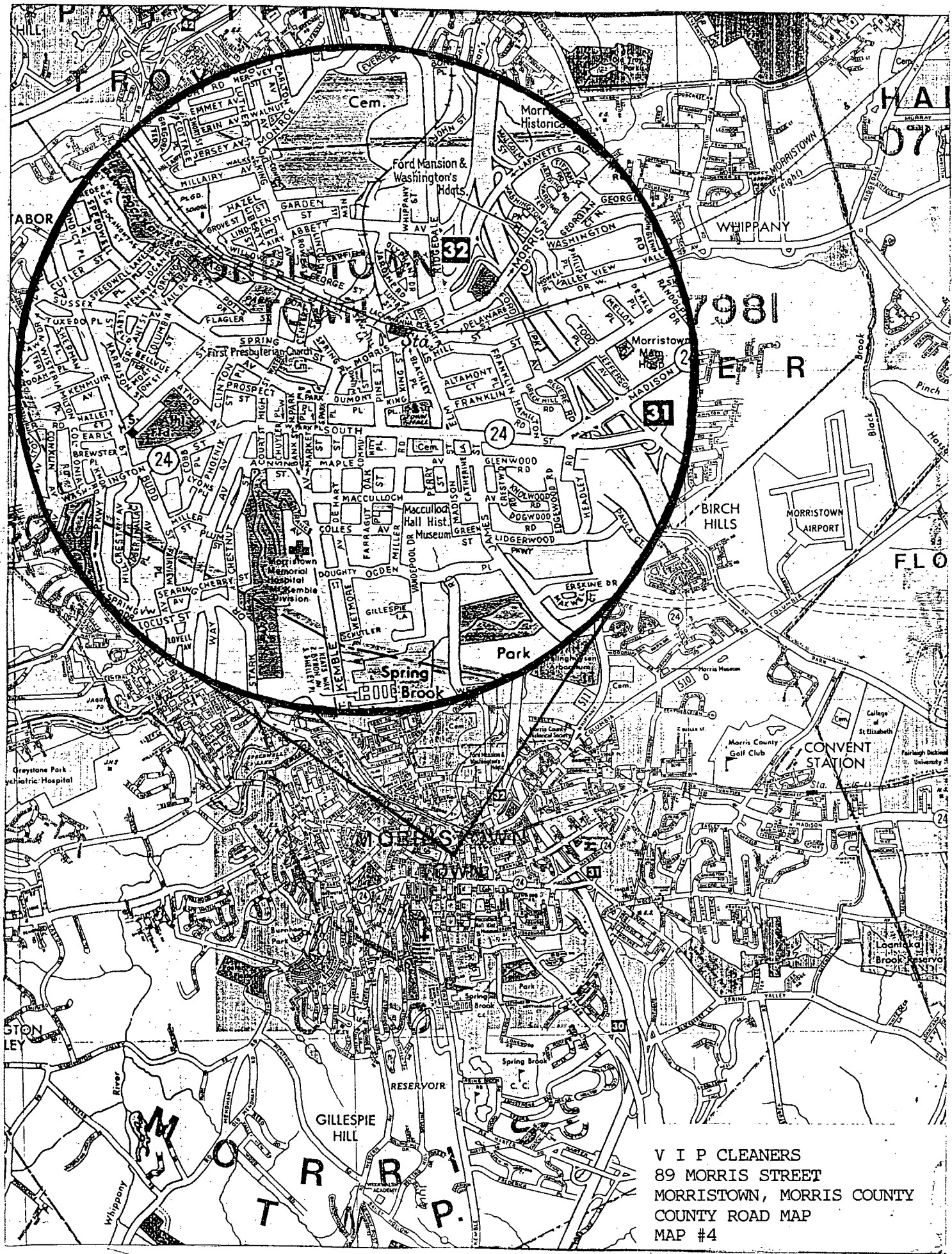
V I P CLEANERS
89 MORRIS STREET
MORRISTOWN, MORRIS COUNTY
USGS TOPOGRAPHIC MAP
LAT. 40 47' 47"
LON. 74 28' 40"
MAP #1



VIP CLEANERS
89 MORRIS STREET
MORRISTOWN, MORRIS COUNTY
SITE MAP, MAP #2

NOT TO SCALE


U.S.POST OFFICE
(EXEMPTED)
31
MORRISTOWN PARKING AUTHORITY (per agreement)
(EXEMPTED)
1.84 ± AC
5
4801
WILMOT STREET
SPRING STREET
MORRIS STREET
(TOWN) LANE
PLACE
LANE
PINE
KING PLACE
LAFAYETTE AVENUE
SHEET 35
SHEET 36
SHEET 47
TAX MAP
TOWN OF MORRISTOWN
MORRIS COUNTY, NEW JERSEY
SCALE : 1" = 50'
APRIL, 1985
ROBERT C. KIRKPATRICK, JR. P.E. & L.S. 11359
KELLER & KIRKPATRICK, P.A.
10 RIDGEDALE AVENUE
REV. BLOCK LOT
5/26 4802 14,15
1/91 4801 20


Ford Mansion & Washington's Hdqts.
First Presbyterian Church
Morristown Memorial Hospital
Macculloch Hall Hist. Museum
Spring Brook
Park
BIRCH HILLS
MORRISTOWN AIRPORT
CONVENT STATION
Morris County Golf Club
Greystone Park Psychiatric Hospital
GILLESPIE HILL
RESERVOIR
WHIPPANY
MORRISTOWN
MORRIS TOWN
MORRIS TOWNSHIP
V I P CLEANERS
89 MORRIS STREET
MORRISTOWN, MORRIS COUNTY
COUNTY ROAD MAP
MAP #4

SUBJECT TO REVISION

WATER WITHDRAWAL POINTS WITHIN 5.0 MILES OF:

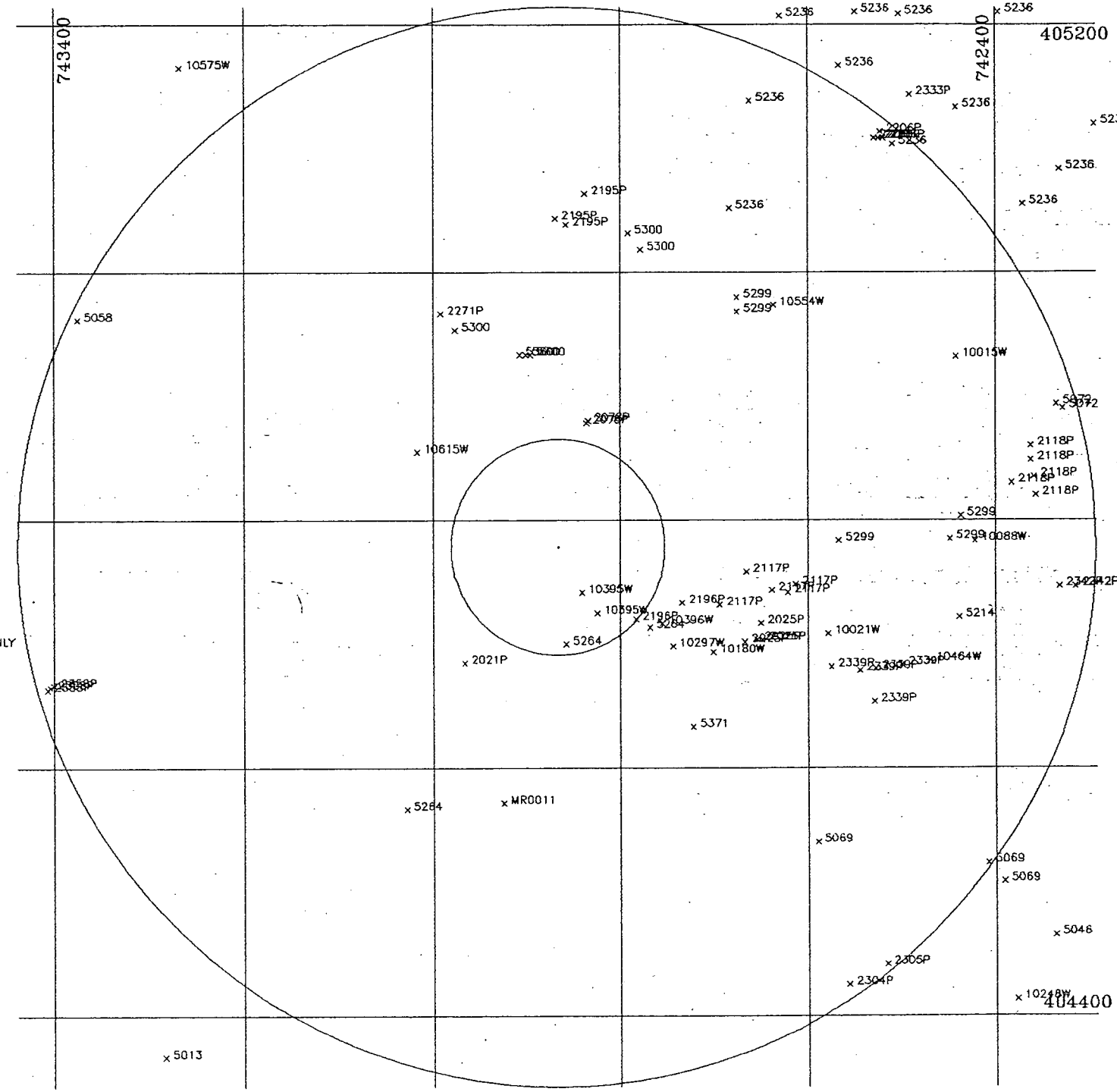
LATITUDE 404747
LONGITUDE 742840

DRAFT

SCALE: 1:63,360
(1.5 Inch = 1 Mile)

× 100,000 GPD WATER WITHDRAWAL POINTS ONLY

1 MILE AND 5 MILE RADII INDICATED



PLOT PRODUCED BY:
NJDEPE
WATER SUPPLY ELEMENT
BUREAU OF WATER ALLOCATION
CN-426
TRENTON, NJ 08625
DATE: 09/29/93

SUBJECT TO REVISION

NUMBER	NAME	SOURCEID	LOCID	LAT	LON	LLACC	DISTANCE	COUNTY	MUN	DEPTH	GED1	GED2	CAPACITY
10015W	SUBURBAN PROPANE	2511349	3	404919	742425		4.1	27	12	75	GOSD		100
10021W	SISTERS CHARITY ST ELIZABETH	2522434	#1	404705	742547		2.6	27	11	300	GTRB		525
10088W	PRECISION ROLLED PRODUCTS, INC	2510880	1	404750	742413	T	3.9	27	10	107	GOSD		500
10180W	J C P & L/MORRISTOWN OFFICE	2511968	1	404656	742700	F	1.8	27	22	600	GTRB		150
10248W	CHATHAM TOWNSHIP/COLONY POOL	2515137	#1	404408	742347	T	6.0	27	05	293			100
10297W	SCHERING-PLOUGH CORPORATION	2523876		404659	742726		1.4	27	17	165	GOGU		90
10395W	CARTERET SAVINGS & LOAN ASSOC.	2503936	WELL 1	404715	742815	T	0.7	27	24	500			150
	CARTERET SAVINGS & LOAN ASSOC.	2515508	WELL 2	404725	742825	T	0.5	27	24	500			125
10396W	CHEMICAL BANK OF NEW JERSEY NA	2502685	1	404710	742733		1.2	27	24	300	GTRB		300
10464W	HAMILTON PARK ASSOCIATES	2526568	WELL 1	404652	742442	T	3.6	27	11	330			400
10554W	NEW JERSEY BELL TELEPHONE	2513372	1	404944	742622	F	3.0	27	12	198	GOSD		120
10575W	SCHINDLER ELEVATOR CORP.		2	405139	743241	F	5.7	27	32	50	GOSD		200
	SCHINDLER ELEVATOR CORP.	2526977	3	405139	743241	F	5.7	27	32	75	GOSD		545
10615W	MORRIS TOWNSHIP/CANCELLED	PROPOSED		404833	743010	T	1.6	27	22				
2021P	SPRING BROOK COUNTRY CLUB	POND	1	404651	742940	F	1.4	27	24		SP		600
2025P	MORRIS COUNTY GOLF CLUB	2510487	1	404702	742632	F	2.1	27	24	271	GOSD		175
	MORRIS COUNTY GOLF CLUB	2516215	2	404701	742640	F	2.0	27	24	238	GOSD		15
	MORRIS COUNTY GOLF CLUB		POND	404710	742630	F	2.0	27	24	14	GOSD		1100
	MORRIS COUNTY GOLF CLUB	2534663	3	404702	742629	F	2.1	27	24	292	GOSD		150
2078P	MENNEN COMPANY	2501891	1	404847	742822	F	1.2	27	22	85	GOTM		200
	MENNEN COMPANY	2513682	2	404848	742821	F	1.2	27	22	100	GOTM		200
2117P	ALLIED-SIGNAL INC.	2504286	1	404726	742623	F	2.0	27	22	767	GTRB		100
	ALLIED-SIGNAL INC.	2509253	2	404729	742608	F	2.2	27	22	188	GOGU		200
	ALLIED-SIGNAL INC.	2515313	4 NOT USED	404719	742656	F	1.6	27	22	253	GOGU		0
	ALLIED-SIGNAL INC.	2522302	10	404725	742613	F	2.2	27	22	198	GOGU		200
	ALLIED-SIGNAL INC.	2529037	14	404735	742639	F	1.8	27	22	235	GOGU		230
2118P	SANDOZ PHARMACEUTICALS CORP.	4500044	1	404836	742338		4.5	27	10	49	GOSD		500
	SANDOZ PHARMACEUTICALS CORP.	4500045	2	404829	742338		4.5	27	10	58	GOSD		500
	SANDOZ PHARMACEUTICALS CORP.	2500635	3	404821	742336		4.5	27	10	81	GOSD		500
	SANDOZ PHARMACEUTICALS CORP.	2513934	4	404812	742335		4.5	27	10	84	GOSD		500
	SANDOZ PHARMACEUTICALS CORP.	2513935	5	404818	742350		4.3	27	10	132	GOSD		500
2195P	WARNER LAMBERT COMPANY	2500695	3	405026	742842		3.0	27	23	102	GOSD		150
	WARNER LAMBERT COMPANY	2503447	4	405023	742835		3.0	27	23	70	GOSD		250
	WARNER LAMBERT COMPANY	2504274	6	405038	742823		3.3	27	23	102	GOSD		500
2196P	MORRISTOWN MEMORIAL HOSPITAL	2505647	1	404720	742720		1.3	27	24	504	GTRB		300
	MORRISTOWN MEMORIAL HOSPITAL	2506577	2	404712	742750		1.0	27	24	507	GTRB		300
2206P	PFIZER, INC.-CONSUMER PRODUCTS	2506488	1	405105	742512	F	4.9	27	29	95	GOSD		275
	PFIZER, INC.-CONSUMER PRODUCTS	2511876	3	405105	742518	F	4.8	27	29	85	GOSD		450
	PFIZER, INC.-CONSUMER PRODUCTS	4500256	4	405108	742514	F	4.9	27	29	85	GOSD		450
	PFIZER, INC.-CONSUMER PRODUCTS	2528829	6	405105	742515	T	4.8	27	29		GOSD		
2271P	GREYSTONE PSY. HOSP. SEE 5300	2514303	WELL #1-67	404940	742955		2.4	27	29	298	GTRB		150
	GREYSTONE PSY. HOSP. SEE 5300	2514417	WELL #2-67	404940	742955		2.4	27	29	270	GTRB		200
2304P	NOE PIERSON CORPORATION	4500306	1	404415	742534		4.9	27	04	294	GTRB		200
2305P	FAIRMOUNT COUNTRY CLUB	4500084	1	404425	742510		4.9	27	04	390	GTRB		325
2333P	BOONTON ELECTRONICS	2525494	5	405126	742455	F	5.3	27	29	78	GOSD		200
2339P	EXXON RESEARCH & ENGINEERING	2500067	1	404650	742500	U	3.4	27	11	250	GOTM		60
	EXXON RESEARCH & ENGINEERING	2515953	RW-3	404647	742527	F	3.0	27	11	88	GOTM		0
	EXXON RESEARCH & ENGINEERING	2506994	RW-1	404648	742517	F	3.2	27	11	94	GOTM		1030
	EXXON RESEARCH & ENGINEERING	2514658	EM-2	404632	742518	F	3.3	27	11	88	GOTM		24
	EXXON RESEARCH & ENGINEERING	4500326	OBWELL OB4	404649	742545	F	2.8	27	11		GOTM		0
2342P	MORRIS COUNTY PARK COMMISSION	4500355	WELL 1	404728	742320	F	4.7	27	11	250	GTRB		313
	MORRIS COUNTY PARK COMMISSION	STORAGE POND	POND	404723	742310	F	4.8	27	11	14	GRS		1100
2358P	MENDHAM GOLF AND TENNIS CLUB	2514439	WELL #1	404639	743402		4.9	27	19	75	GOTM		50
	MENDHAM GOLF AND TENNIS CLUB	2514799	WELL #2	404638	743404		4.9	27	19	50	GOTM		140
	MENDHAM GOLF AND TENNIS CLUB	POND 1		404640	743400		4.8	27	19		G		

NUMBER	NAME	SOURCEID	LOCID	LAT	LON	LLACC	DISTANCE	COUNTY	MUN	DEPTH	GEO1	GEO2	CAPACITY
	MENDHAM GOLF AND TENNIS CLUB	POND 2		404640	743400		4.8	27	19		G		
5013	NEW JERSEY-AMERICAN WATER CO.	2510173	N.E. WELL	404340	743250	T	6.0	35	02	1450	GTRB		350
5046	CHATHAM BOROUGH	4500270	1	404439	742323		5.9	27	05	143	GOSD		1050
	CHATHAM BOROUGH	4500271	2	404439	742323		5.9	27	05	140	GOSD		560
	CHATHAM BOROUGH	2505687	3	404439	742323		5.9	27	05	150	GOSD		1200
5058	MORRIS COUNTY MUA	2510770	MUSIKER 1	404937	743345	F	4.9	27	32	130	GPC		375
5069	MADISON BOROUGH	2501962	A	404505	742355		5.2	27	17	130	GOSD		750
	MADISON BOROUGH	2504207	B	404505	742355		5.2	27	17	143	GOSD		1200
	MADISON BOROUGH	2504209	C	404524	742554		3.7	27	17	160	GOSD		1200
	MADISON BOROUGH	2504423	D	404514	742405		5.0	27	17	181	GOSD		1000
	MADISON BOROUGH	2514041	E-STANDBY	404505	742355		5.2	27	17	140	GOSD		1500
5072	EAST HANOVER TOWNSHIP	2514205	2	404856	742322	F	4.8	27	10	115	GOSD		1000
	EAST HANOVER TOWNSHIP	2513672	1	404854	742318	F	4.9	27	10	130	GOSD		500
5214	FLORHAM PARK BOROUGH	4500299	2	404713	742423	S	3.8	27	11	105	GOSD		1000
	FLORHAM PARK BOROUGH	2521204	4	404713	742423	S	3.8	27	11	139	GOSD		1300
5236	PARSIPPANY-TROY HILLS	2507381	1A	405206	742530	F	5.7	27	29	138	GOSD		420
	PARSIPPANY-TROY HILLS	4500032	3	405206	742358	F	6.4	27	29	75	GOSD		350
	PARSIPPANY-TROY HILLS	4500033	4	405205	742502	F	5.9	27	29	82	GOSD		225
	PARSIPPANY-TROY HILLS	2507545	4A	405205	742502	F	5.9	27	29	150	GOSD		900
	PARSIPPANY-TROY HILLS	2507620	7	405102	742506	F	4.9	27	29	66	GOSD		500
	PARSIPPANY-TROY HILLS	4500034	8-1	405033	742343	F	5.4	27	29	90	GOSD		300
	PARSIPPANY-TROY HILLS	4500035	8-2	405033	742343	F	5.4	27	29	80	GOSD		400
	PARSIPPANY-TROY HILLS	4500036	8-3	405033	742343	F	5.4	27	29	80	GOSD		600
	PARSIPPANY-TROY HILLS	2511628	10	405204	742618	F	5.3	27	29	129	GOSD		500
	PARSIPPANY-TROY HILLS	2512635	11	405050	742320		5.8	27	29	80	GOSD		70
	PARSIPPANY-TROY HILLS	2512718	12	405140	742540	F	5.2	27	29	100	GOSD		300
	PARSIPPANY-TROY HILLS	2511106	13	405112	742258	F	6.3	27	29	47	GOSD		425
	PARSIPPANY-TROY HILLS	2513259	14	405031	742650	F	3.5	27	29	90	GOSD		700
	PARSIPPANY-TROY HILLS	2515809	15	405031	742650	F	3.5	27	29	87	GOSD		150
	PARSIPPANY-TROY HILLS	2527259	20	405120	742425		5.5	27	29	95	GOSD		700
	PARSIPPANY-TROY HILLS	PROPOSED	21	405123	742637	U	4.5	27	29	85	GOSD		1400
5264	SOUTHEAST MORRIS COUNTY MUA	2514520	LIDGERWOOD	404700	742835	F	0.9	27	24	265	GTRB		410
	SOUTHEAST MORRIS COUNTY MUA	2513439	TURNBULL	404708	742741	F	1.1	27	24	496	GTRB		450
	SOUTHEAST MORRIS COUNTY MUA	4500350	SAND SPRG	404540	743017	F	2.8	27	13	94	GTRB		600
5299	SOUTHEAST MORRIS COUNTY MUA	2500048	WING	404941	742645	F	2.8	27	12	136	GOSD		3200
	SOUTHEAST MORRIS COUNTY MUA	2503527	TODD	404948	742645	F	2.9	27	12	144	GOSD		1200
	SOUTHEAST MORRIS COUNTY MUA	2514181	BLCK BRK 1	404751	742429	F	3.7	27	12	124	GOSD		1400
	SOUTHEAST MORRIS COUNTY MUA	2514182	BLCK BRK 2	404802	742422	F	3.8	27	12	122	GOSD		1400
	SOUTHEAST MORRIS COUNTY MUA	4500351	NORMANDY	404750	742540	F	2.6	27	12	80	GOSD		400
5300	SOUTHEAST MORRIS COUNTY MUA	4500038	WELL NO.1	404920	742905	F	1.8	27	23	138	GOSD		300
	SOUTHEAST MORRIS COUNTY MUA	4500039	WELL NO. 2	404920	742901	F	1.8	27	23	125	GOSD		500
	SOUTHEAST MORRIS COUNTY MUA	2508493	WELL NO. 3	404920	742858	F	1.8	27	23	139	GOSD		500
	SOUTHEAST MORRIS COUNTY MUA	2508827	WELL NO. 4	404920	742558	F	1.8	27	29	58	GOSD		100
	SOUTHEAST MORRIS COUNTY MUA	2514034	SHONGUM.	404932	742946	F	2.2	27	22	150	GTRB		400
	SOUTHEAST MORRIS COUNTY MUA	4500316	WELL #1	405019	742755	F	3.0	27	29	60	GOSD		350
	SOUTHEAST MORRIS COUNTY MUA	4500317	WELL #2	405011	742747	F	2.9	27	12	60	GOSD		400
5371	SOUTHEAST MORRIS COUNTY MUA.	2533503	MOORE EST.	404620	742713	F	2.1	27	22	210	GOSD		600
MR0011	ARNOLD FARMS	SILVER CREEK	STREAM 1	404543	742915	F	2.4	27	13		SPLPP		1200

Number of Observations: 103

WATER WITHDRAWAL POINTS
REFERENCE SHEET

THE FOLLOWING CODES DENOTE THE TYPE OF WELL OR SURFACE WATER INTAKE AS LISTED ON WATER WITHDRAWAL POINTS MAPS.

1000D - DEWATERING PERMIT OR TEMPORARY PUMPING PERMIT
2000 - INDUSTRIAL PERMITS, GOLF COURSES AND REMEDIATION PUMPING PERMITS
4000 - SURFACE DIVERSION AND SURFACE WATER INTAKES
5000 - PUBLIC WATER SUPPLY WELLS
10000 - WELLS WITH THE CAPACITY TO PUMP >100,000 GALLONS BUT DO NOT
XX0000 - AGRICULTURAL CERTIFICATION, FIRST TWO LETTERS ARE THE FIRST TWO LETTERS OF THE COUNTY IN WHICH THE PERMIT IS ISSUED.

P - PRIVATE WELL
PS - PRIVATE SURFACE INTAKE

CODES USED IN THE WATER WITHDRAWAL POINTS LISTING

This packet contains information on the database codes that the Bureau of Water Allocation uses in the Water Withdrawal Points Listing.

COUNTY:

01 - Atlantic	15 - Gloucester	29 - Ocean
03 - Bergen	17 - Hudson	31 - Passaic
05 - Burlington	19 - Hunterdon	33 - Salem
07 - Camden	21 - Mercer	35 - Somerset
09 - Cape May	23 - Middlesex	37 - Sussex
11 - Cumberland	25 - Monmouth	39 - Union
13 - Essex	27 - Morris	41 - Warren

GEO:

RECENT	
Surficial Deposits	GRS
PLEISTOCENE	
Glacial Undifferentiated	GQGU
Stratified Drift	GQSD
Terminal Moraine	GQTM
Bridgeton	GQBS
Cape May	GQCM
Holly Beach Mbr.	GQCHB
Estuarine Sand	GQES
Pennsauken	GQPS
TERTIARY	
Beacon Hill	GTBH
Cohansey	GTCH
Cohansey & Kirkwood	GTCK
Kirkwood	GTKW
Upper	GTKWU
Rio Grande	GTKRG
Lower	GTKWL
Piney Point Mbr.	GTKPP
Shark River Marl	GTSR
Manasquan Marl	GTMQ
Vincentown Sand	GTVT
Hornerstown Marl	GTHT
CRETACEOUS	
Red Bank	GKRB
Navesink	GKNS
Mount Laurel	GKML
Wenonah	GKWE
Mount Laurel & Wenonah	GKMW
Marshalltown	GKMT
Englishtown	GKET
Woodbury	GKWB
Merchantville	GKMV
Magothy	GKM

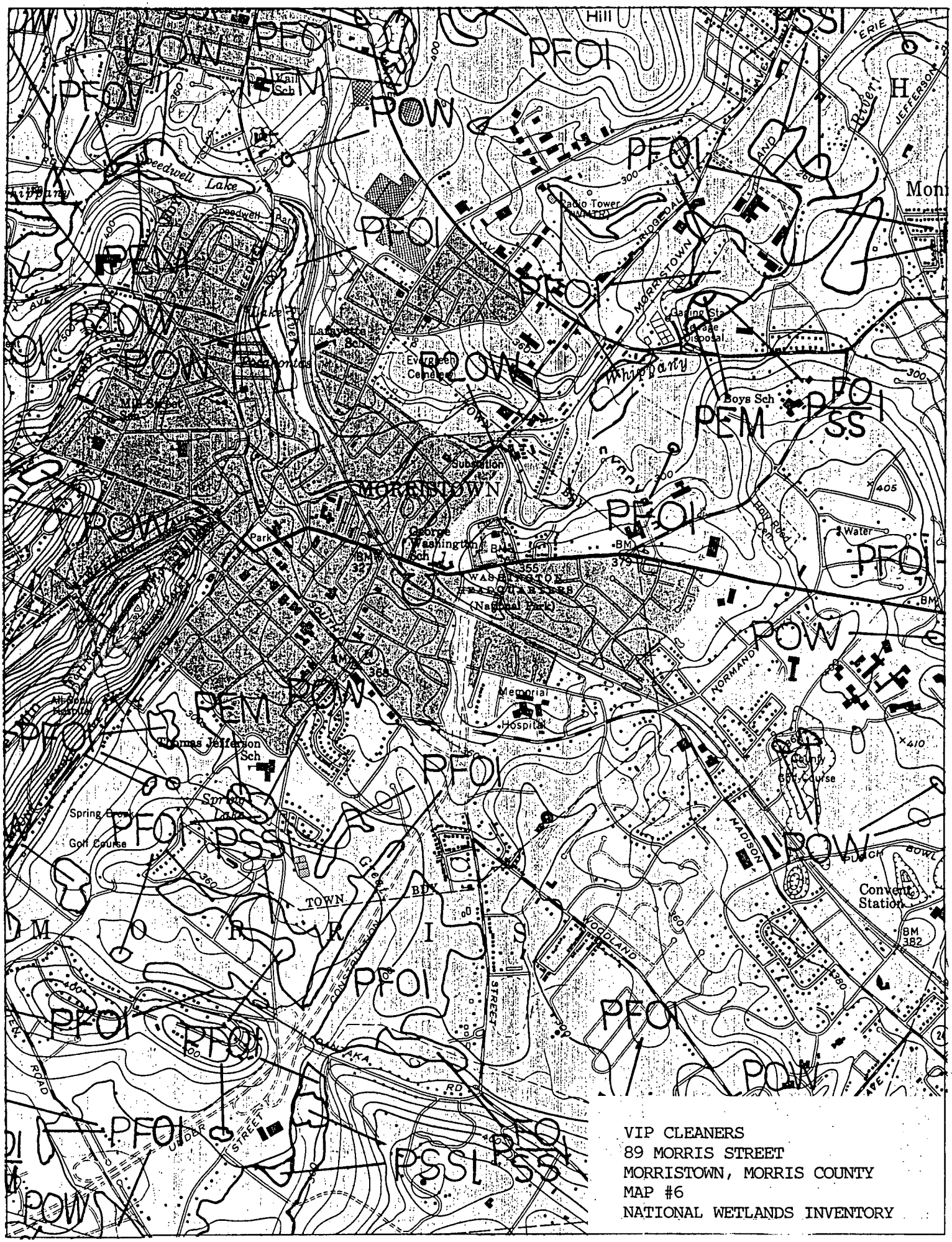
Old Bridge	GKROB
Raritan	GKR
Sayreville Sand	GKRSS
Farrington	GKRF
Raritan/Magothy	GKMR
Potomac	GKP
TRIASSIC	
Brunswick Formation	GTRB
Lockatong Formation	GTRL
Stockton Formation	GTRS
Basalt	GTRBS
Diabase	GTRDB
Conglomerate	GTRCG
DEVONIAN	
Undifferentiated	GD
SILURIAN	
Bossardville Limestone	GSBD
Decker Formation	GSDK
Longwood Shale	GSLS
Poxono Island Fm	GSPI
Greenpond Conglomerate	GSGP
High Falls	GSHF
Shawangunk Fm	GSSG
ORDOVICIAN	
Martinsburg Fm	GOMB
Jacksonburg Fm	GOJB
Kittatinny Group	GOK
Outleaunee Fm	GOKO
Harmonyvale Mbr	GOKOH
Beaver Run Mbr	GOKOB
Epler	GOKE
Rickenbach	GOKR
CAMBRO ORDOVICIAN	
Kittatinny Fm	GCOK
CAMBRIAN	
Hardyston Quartzite	GCH
Allentown Fm	GCKA
Upper Mbr	GCKU
Limeport Mbr	GCKLP
Leithsville Fm	GCKL
Walkill Mbr	GCKLW
Hamburg Mbr	GCKLH
Califon Mbr	GCKLC
PRECAMBRIAN	
Granite	GPCGR
Gneiss	GPCGN
Undifferentiated	GPC

Franklin Lms	GPCFL
DELAWARE RIVER BASIN	SD
Unknown or Non-Specific	SDALL
Alloways Creek	SDALE
Alexsocken Creek	SDASC
Assiscunk Creek	SDASP
Assunpink Creek	SDBIG
Big Timber Creek	SDBLA
Blacks Creek	SDCOO
Cooper's Creek	SDCRA
Crafts Creek	SDCRO
Crosswicks Creek	SDDEL
Delaware River	SDFLA
Flat Brook	SDHAK
Hakihokake Creek	SDHAR
Harihokake Creek	SDJAC
Jacob's Creek	SDLOC
Lockatong Creek	SDLOP
Lopatcong Creek	SDMNT
Mantua Creek	SDMUS
Musconetcong River	SDNIC
Nichisakawick Creek	SDOLD
Old Man's Creek	SDPAU
Paulins Kill	SDPEN
Pennsauken Creek	SDPST
Pequest River	SDPOH
Pohatcong Creek	SDRAC
Raccoon Creek	SDRAN
Rancocas Creek	SDSAL
Salem River	SDWIC
Wickecheoke Creek	
RARITAN RIVER BASIN	SR
Unknown or Non-Specific	SRLAW
Lawrence Brook	SRLOW
Lower Raritan	SRMIL
Millstone River	SRNBR
North Branch Raritan	SRSBR
South Branch Raritan	SRSRV
South River	
PASSAIC RIVER BASIN	SP
Unknown or Non-Specific	SPCAN
Canoe Brook	SPLMP
Lower Mid-Passaic River	SPLOW
Lower Passaic	SPPAS
Passaic River	SPPEC
Peckman River	SPPNK
Pequannock River	SPPOM
Pompton River	SPRAM
Ramapo River	SPROC
Rockaway River	SPSAD
Saddle River	

Upper Mid-Passaic River	SPUMP
Upper Passaic River	SPUPP
Wanaque River	SPWAN
Whippany River	SPWHI
ATLANTIC COASTAL BASIN	
Unknown or Non-Specific	SC
Atlantic County Coastal	SCATL
Cape May County Coastal	SCCAP
Cedar Creek	SCCED
Great Egg Harbor River	SCGRE
Manasquan River	SCMSQ
Metedeconk River	SCMET
Monmouth County Coastal	SCMON
Mullica River	SCMUL
Navesink River	SCNAV
Ocean County Coastal	SCOCE
Raritan Bay	SCRAR
Shark River	SCSHA
Shrewsbury River	SCSHR
Toms River	SCTOM
Tuckahoe River	SCTUC
HUDSON RIVER BASIN	
Unknown or Non-Specific	SH
Hudson River	SHHUD
Papakating Creek	SHPAP
Pochuck Creek	SHPOC
Wallkill River	SHWAL
HACKENSACK RIVER BASIN	
Unknown or Non-Specific	SK
Hackensack River	SKHAC
RAHWAY RIVER BASIN	
Unknown or Non-Specific	SY
Rahway River	SYRAH
ELIZABETH RIVER BASIN	
Unknown or Non-Specific	SE
Elizabeth River	SEELI
DELAWARE BAY BASIN	
Unknown or Non-Specific	SB
Cohansey River	SBCOH
Maurice River	SBMAU
Stow Creek	SBSTO

LLACC:

S - accurate to +- 1 second
F - accurate to +- 5 seconds
T - accurate to +- 10 seconds
M - accurate to +- 1 minute
U - accuracy unknown



VIP CLEANERS
89 MORRIS STREET
MORRISTOWN, MORRIS COUNTY
MAP #6
NATIONAL WETLANDS INVENTORY

NATIONAL FLOOD INSURANCE PROGRAM

FIRM
FLOOD INSURANCE RATE MAP

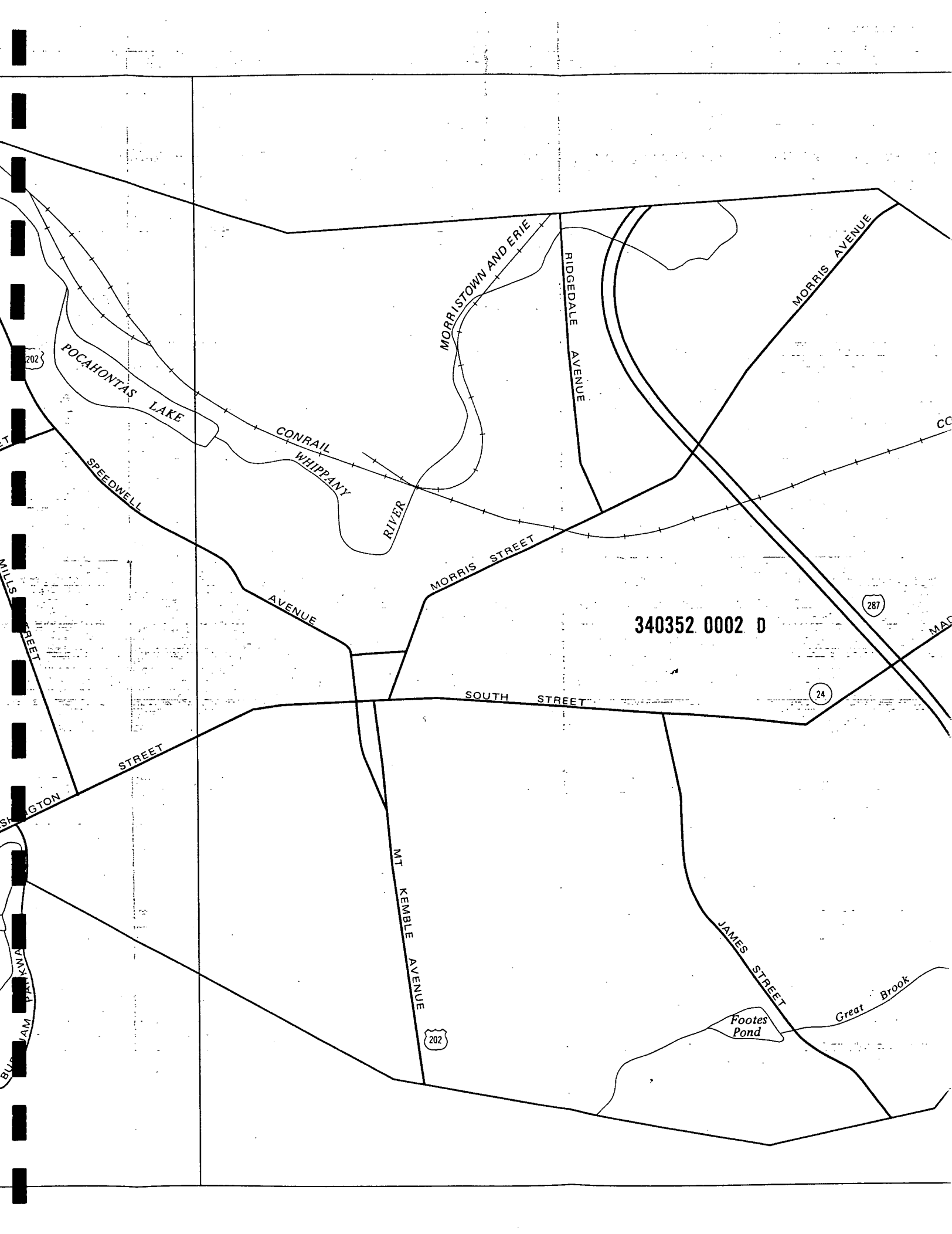
TOWN OF
MORRISTOWN,
NEW JERSEY
MORRIS COUNTY

MAP INDEX
PANELS PRINTED: 1, 2

COMMUNITY-PANEL NUMBERS
340352 0001-0002

MAP REVISED:
JULY 3, 1986

Federal Emergency Management Agency


MORRISTOWN AND ERIE
RIDGEDALE AVENUE
MORRIS AVENUE
202
POCAHONTAS LAKE
CONRAIL
WHIPPANY
RIVER
SPEEDWELL
AVENUE
MORRIS STREET
287
340352 0002 D
SOUTH STREET
24
STREET
MT KEMBLE AVENUE
202
JAMES STREET
Footes Pond
Great Brook

ATTACHMENT A

Let's protect our earth

State of New Jersey
DEPARTMENT OF ENVIRONMENTAL PROTECTION
DIVISION OF WATER RESOURCES
CN 029
Trenton, N.J. 08625-0029

ATTN: BUST Program
(609) 984-3156

For State Use Only

Date Rec'd. _____
Auth. _____
Routing _____
UST NO. _____

STANDARD REPORTING FORM
for reporting activities at an UST facility:

____ General Facility Information Changes
__X__ Closure (Abandonment or Removal)
____ Temporary Closure
____ Change in Service
____ Sale or Transfer
____ Substantial Modification
____ Financial Responsibility
____ Address Change Only

Check ONLY One Type of Activity – Complete Form For That Activity

(More than one tank can be listed per activity)

*** * * NOTE * * * ALL NEW tank installations at existing registered facilities must submit a Registration Questionnaire for the new tanks.**

Answer questions 1 through 5 and others as applicable.

1. Company name and address (as it appears on registration questionnaire):
P. AUSTIN, W. AUSTIN
POST OFFICE BOX 29
MORRIS PLAINS, NEW JERSEY 07950

2. Facility name and location (if different from above):
MORRISTOWN TIRRE
89 MORRIS STREET
MORRISTOWN, NEW JERSEY 07960

3. Contact person for this activity:
JAMES JOHNSTON, P.E.
Telephone Number: (908) 686-0044

4. The identification number of the affected tank as it appears in Question Number 12 on the Registration Questionnaire:
P1 (0001)

5. Registration Number (if known): UST - 0228873

6. For GENERAL FACILITY INFORMATION changes (address, telephone, contact person, etc. – supply NEW information only):

a. Facility name: PETER AUSTIN
b. Facility location: _____
c. Owner's mailing address: _____
_____
_____ NJ _____
_____
d. Block: _____ Lot: _____
e. Contact person (facility operator): PETER AUSTIN
f. Contact telephone number: (201) 267-8435 - _____
g. Other (Specify): _____

ATTACHMENT A1

(OVER)

PMK Ferris and Perricone, inc.
CONSULTING ENGINEERS

September 27, 1991

PRINCIPALS:
Philip M. Keegan
James Ferris, P.E.
Gerald Perricone, P.E.
James Johnston, P.E.

New Jersey Department of
Environmental Protection and Energy
Division of Responsible Party Site Remediation
Bureau of Underground Storage Tanks
CN029
Trenton, New Jersey 08625-0029

Attn: Ms. Diane Pupa

UNDERGROUND STORAGE TANK CLOSURE PLAN
MORRISTOWN TIRE
89 MORRIS AVENUE
MORRISTOWN, NEW JERSEY
PMK, F&P #5182

Dear Ms. Pupa:

INTRODUCTION

This report presents the underground storage tank closure plan for the underground storage tank removal which will be performed at the Morristown Tire facility located at 89 Morris Avenue in Morristown, New Jersey. The underground storage tank (UST) scheduled for removal is a 5,000 gallon #6 heating oil tank.

SITE ASSESSMENT PLAN

A site assessment plan will be implemented during the underground storage tank removal to evaluate the potential that soil and/or groundwater have been impacted by releases and/or discharges from the subject underground storage tank system. During the course of the removal operations, a representative of PMK, Ferris & Perricone, Inc. will be on-site to visually observe the excavation for evidence of discolored soils, soil staining, free product and/or odors indicative of a product release. Where feasible, field test methods will be utilized to determine the presence of residual saturation of contaminates within the soil in accordance with the recommended procedures in the NJDEPE document "Appendix 10 Soil Sampling and Analysis Requirements". Our representative would utilize portable field screening equipment to evaluate the potential presence of organic vapors within the soils located adjacent to the tank. In the event that there is no visual evidence of soil contamination and field screening equipment does not indicate the presence of elevated levels of organic vapor, sampling will be performed on the soil located below the subject tank. All samples will be extracted from the natural soils located

ATTACHMENT A2

below the tank bedding material. Biased samples would be obtained where field screening methods indicate the presence of elevated levels of organic vapors.

Based on the reported product historically stored within the tank, it is anticipated that the following sample frequency and parameters for analysis will be implemented as part of the sampling plan:

5,000 gallon #2 Heating Oil USTs:	7	Total Petroleum Hydrocarbon (TPH) Analysis

*If any of the samples are observed to have a TPH concentration in excess of 100 parts per million (ppm), the two highest samples in excess of 100 ppm would be subject to Base Neutral +15 analysis in accordance with EPA Method 625 +15.

Any of the above samples which is found to have TPH concentrations in excess of 500 ppm would be subjected to an Acid-Base Partition Clean-Up in accordance with EPA Test Method 3650, as presented in the EPA publication Test Methods for Evaluating Solid Waste.

Based on available information, there does not appear to be any product bearing piping runs in excess of 15 feet. In the event that significant piping runs are encountered, one sample for each additional 15 feet would be obtained. These samples would be subject to the same laboratory analysis as detailed above.

In the event that a discharge is confirmed by our visual observations and/or field screening methods, the owner shall notify the NJDEPE Environmental Hotline and provide information regarding the nature, scope and extent of the subject release.

All soil sampling operations will be performed in accordance with the guidelines presented in the NJDEPE Field Sampling Procedures Manual and the NJDEPE Interim Closure Requirements for USTs. Soil samples will be obtained using a stainless steel hand trowel, placed in a laboratory prepared sample jar, and capped with lined lids. Sampling equipment will be decontaminated between sample locations to prevent potential cross contamination between sampling events. The samples will be transmitted to a New Jersey certified

laboratory for chemical analysis for the above noted parameters using appropriate chain of custody procedures.

Based on the tank closure requirements of the New Jersey Underground Storage Tank regulations, groundwater assessment is not required for the closure of USTs containing heating fuel. Consequently groundwater monitoring wells are not proposed as part of this closure plan.

TANK DECOMMISSIONING PLAN

The procedures used to perform the excavation, removal and disposal of the subject underground storage tank system shall be in conformance with the requirements of the American Petroleum Institute Recommended Practice 1604 (API 1604).

The tank removal procedures consist of the following procedures:

1. The tank will be cleaned and washed in accordance with the recommended procedures of API Publication 2015, "Cleaning Petroleum Storage Tanks", and the National Fire Protection Association Publication 327, "Standard Procedures for Cleaning or Safeguarding Small Tanks and Containers".

2. The tank removal area will be prepared by cleaning the site, setting up barricades, and setting up storage areas using 6 mil plastic.

3. The tank will be purged of residual vapors using dry ice or other appropriate methods.

4. Combustible gases and oxygen level in the tank will be tested using a combustible gas indicator and an oxygen meter, respectively.

5. The tank will be excavated and removed with the upper soil being segregated from the lower materials, where feasible. Potentially impacted materials will be stockpiled atop plastic and covered with the same.

6. The tank system will be transported to a scrap dealer for disposal and a confirming bill of sale will be obtained.

Please do not hesitate to contact us if you have any questions regarding the information contained herein.

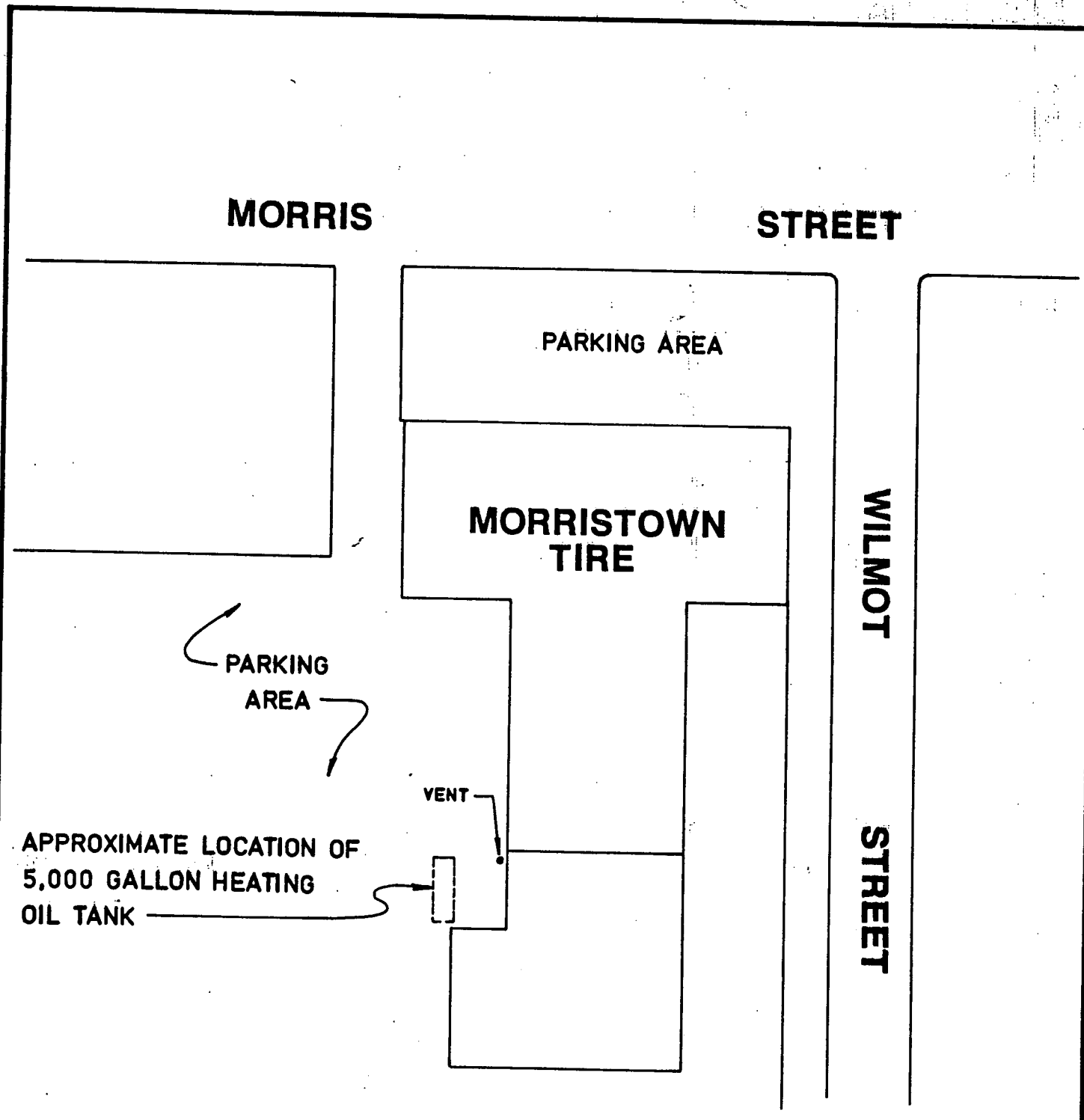
Respectfully submitted,
PMK, Ferris & Perricone, Inc.

James Johnston, P.E.
Principal

Michael Mergardt
Environmental Scientist

MM/brm/1077r8

ATTACHMENT A5



PLOT PLAN

MORRISTOWN TIRE
MORRISTOWN, NEW JERSEY

PMK Ferris and Perricone, inc.
CONSULTING ENGINEERS
493 Lehigh Avenue, Union, NJ 07083
908/686-0044

DRAWN BY D.M.	DATE 10/15/91
CHECKED BY M.M.	SCALE 1"=40'
PROJECT NO. 5182	SHEET NO.

PMK 015

ATTACHMENT A6

PMK ferris and Perricone CONSULTING ENGINEERS

ANTICIPATED IMPLEMENTATION SCHEDULE
UNDERGROUND STORAGE TANK REMOVAL
MORRISTOWN TIRE
MORRISTOWN, NEW JERSEY
PMK, F & P #5182

Tank Cleaning: November 4, 1991

Tank Removal: November 5th-6th, 1991

Site Assessment (Soil Sampling): November 5th-6th, 1991

Site Assessment Summary Report: Week of February 6, 1992

ATTACHMENT A1

92-02-14-1003

PMK Group

CONSULTING & ENVIRONMENTAL ENGINEERS
COMPLIANCE & REGULATORY MANAGEMENT

PRINCIPALS:
Philip M. Keegan
James Ferris, P.E.
Gerald Perricone, P.E.
James Johnston, P.E.

MANAGING PARTNERS
Terry C. Damon
Robert M. Gerard

May 8, 1992

State of New Jersey
Department of Environmental Protection
and Energy
Division of Responsible Party Site Remediation
Bureau of Underground Storage Tanks
CN 029
Trenton, New Jersey 08625-0029

Attention: Ms. Diane Pupa

VIP CLEANERS (FORMERLY MORRISTOWN TIRE)

CLOSURE PLAN IMPLEMENTATION SUMMARY
89 MORRIS STREET
MORRISTOWN, NEW JERSEY
APPROVAL #C-91-4319
PMK, F & P #5182

92-2-14-1003-15

92

INTRODUCTION

This report presents the results of the Closure Plan Site Assessment performed during the removal of an underground storage tank system located at 89 Morris Street, Morristown, New Jersey. The tank removed for this closure was a 7,000 gallon capacity number 6 heating oil underground storage tank (UST). The subject UST had been initially registered with the New Jersey Department of Environmental Protection and Energy (NJDEPE) Bureau of Underground Storage Tanks (BUST) as a 5,000 gallon UST and was assigned registration number UST 0228873. The location of the site is presented on the Site Location Map, Plate 1. A cross-sectional view of the subject site is presented on Plate 2.

CLOSURE PLAN APPROVAL

On September 27, 1992 an Underground Storage Tank Closure Plan application was submitted to the Bureau of Underground Storage Tanks. On December 20, 1991 the Bureau assigned Closure Plan Approval number C-91-4319 to the project. In accordance with the requirements of N.J.A.C. 7:14B-9, the Construction Code Official for the Town of Morristown was contacted prior to initiation of the UST removal operations. A copy of the demolition permit issued by the Town of Morristown for the tank removal is provided as Plate 3.

TANK DECOMMISSIONING OPERATIONS

On February 10, 1992, representatives of ANCO Environmental Construction, Inc. were present at the subject site to commence tank decommissioning operations. The first phase of the tank

493 Lehigh Avenue, Union, NJ 07083 • 908-686-0044 • Fax 908-686-0715

ATTACHMENT A8

removal operations consisted of the removal of an approximately 12 inch thick reinforced concrete and asphalt layer from atop the tank location. An overburden soil layer of approximately 9 inches was then removed to expose the tank surface.

The tank was purged of residual vapors, drained of product and sludges, and then cleaned of the residual bottom sludges and liquids. Associated product bearing piping was also drained of residual product to prevent a potential discharge during the removal of same. The product removed from the tank, as well as the sludges and liquids generated during the tank cleaning operations, were transported to the L and L Oil Service facility in Aberdeen, New Jersey for treatment and/or disposal. Copies of the Uniform Hazardous Waste Manifests for the removal of the above liquids are presented as Plates 4A through 4F.

Subsequent to the tank cleaning operations, the tank and associated piping were excavated and removed. Upon removal, the tank was visually inspected by our on-site representative, the Town of Morristown Construction Code Official, and a representative of the Town of Morristown Engineering Office for indications of potential corrosion, pitting and/or holes. None of the referenced personnel reportedly observed any evidence of holes or significant signs of corrosion on the exterior tank surface. The associated product bearing piping was observed by our representative to contain corrosion in limited areas. The tank and piping were subsequently removed from the site and transported to Riverside Scrap Iron and Metal in Rahway, New Jersey where the tank and piping were sold as scrap metal. The Certification of Weight for the scrapped tank is presented as Plate 5.

SITE ASSESSMENT

During the course of the tank decommissioning operations, a representative of PMK, Ferris and Perricone, Inc. was present at the site to observe the existing site conditions and to implement the requirements of the Site Assessment. Our representative examined the excavation and adjacent site conditions to evaluate the potential presence of stained soils, free product and/or odors indicative of a product spill or discharge. Upon removal of the concrete/asphalt layer, the overburden soil and the subject UST, our representative visually observed product stained soil in the vicinity of the product bearing piping. Headspace analysis was performed on composite soil samples collected from the vicinity of the stained soils , using an organic vapor analyzer (OVA) to determine the potential presence of volatile organic compounds within the same. The results of the headspace analysis revealed volatile organic concentrations of 50 to 70 parts per million above background concentrations.

Based on the visual observations of our representative and the results of the field screening operations, corrective action measures were implemented at the site. These activities consisted of the excavation and stockpiling of potentially impacted soil from the bottom of the excavation. The corrective action measures extended the excavation to a depth of approximately 11 feet below the surface grade, approximately 2 1/2 feet beyond the former UST invert level. Very slight groundwater infiltration was observed within the clayey silt layer encountered at the bottom of the excavation. In addition, a slight petroleum sheen was observed atop water that collected within the excavation. Potentially impacted water was removed from the excavation and transported to L and L Oil Service in Aberdeen, New Jersey for disposal. A copy of the Hazardous Waste Manifest for the disposal of these liquids has been included within Plate 4. As a result of the above, the NJDEPE Hotline was notified and BUST Case #91-214-1003-15 was assigned.

Petroleum contaminated soil removed from the excavation was stockpiled at the site atop and covered by plastic sheeting, and subsequently loaded into tandem trucks that were then transported to Pittsburgh, Pennsylvania for off-loading onto barges. The barges were transported to the Vernor Material and Equipment Company facility in Clute, Texas, where the soil was recycled into a usable asphalt road base. The facility permit as well as the letter indicating the acceptance of the material for reuse activities are presented on Plates 6A and 6B.

Subsequent to the implementation of corrective action measures, eight soil samples were obtained from the excavation in accordance with the protocol and sampling parameters established in the Closure Plan. The soil samples were obtained from the side walls of the excavation and from the soil remaining at the bottom of the excavation subsequent to the tank removal. In addition, composite soil samples had been previously collected from the visibly stained overburden soil which had originally been used as bedding and backfill material at the time of the UST installation. The locations of the soil samples relative to existing site features are presented on the Soil Sample Location Plan, Plate 7. Subsequent to the collection of soil samples, the excavation was backfilled with an imported fill material obtained from the Millington Quarry of Millington, New Jersey.

The soil samples were collected utilizing a stainless steel hand trowel, which was decontaminated prior to and between sampling events. The soil samples were placed in laboratory prepared sample jars capped with lined lids, and transported to Envirotech Research, Inc. in Edison, New Jersey (NJDEPE Certified Lab Number 12543) for laboratory chemical analysis. The laboratory analysis program consisted of the determination of total petroleum

hydrocarbon (TPH) concentrations utilizing USEPA Method 418.1. The samples were analyzed for potential TPH concentrations on March 3, 1992. Based on the results of the TPH analysis, an additional quantity of soil was excavated at and in the vicinity of the location from which Sample 1 was retrieved. Subsequent to the additional excavation, Sample 1A was collected at a depth of approximately one foot beyond the depth from which Sample 1 had been collected. Sample 1A was analyzed on March 10, 1992 for potential concentrations of base neutral extractable compounds utilizing USEPA Method 8270, and for TPH.

LABORATORY ANALYSIS RESULTS

The results of the laboratory chemical analyses performed on the soil samples obtained as a part of this study indicate that the TPH concentrations in Sample Nos. 2 through 7 were observed to either be not detected above analytical instrument detection levels or below the existing Interim NJDEPE Action Level of 100 parts per million for TPH concentrations in soil. Sample Nos. 1 and 1A were observed to contain respective TPH concentrations of 875 ppm and 210 ppm.

Based on the results of TPH analysis for Samples 1 and 1A, and in accordance with the sampling requirements of the approved Closure plan, analysis for base neutral extractable compounds (BN) was performed on Sample No. 1A. The results of this analysis indicated that targeted base neutral compounds were not present at concentrations in excess of analytical instrument detection levels.

The Results of the Laboratory Chemical Analyses, the Chain of Custody documents and the Quality Assurance/Quality Control (QA/QC) Checklist are presented as Appendix A. A Summary of the laboratory analysis results is presented as Table 1.

The completed certifications as required by N.J.A.C. 7:14B-9.5a, the Underground Storage Tank Site Summary Report Form and the Standard Reporting Form are presented as Appendix B.

RESULTS OF SITE ASSESSMENT

Based on the information obtained during the course of the tank closure, as well as a review of the laboratory analysis results, we have determined the following:

1. A 7,000 gallon #6 heating oil tank was opened, cleaned, purged, excavated, removed and disposed of in accordance with the requirements of the Approved Closure Plan. The subject tank was not observed to contain significant corrosion, holes or pitting. The associated piping was observed to contain limited areas of corrosion, although no holes nor pitting was

observed.

2. Subsequent to the removal of the subject tank and piping, petroleum impacted soils were visually observed within the excavation in the vicinity of the piping, and were consequently addressed, excavated and removed. Additionally, a sheen was observed atop standing rainwater/groundwater located within the excavation. The potentially impacted water was then pumped, containerized and removed. As a result of the above, a discharge was reported to the NJDEPE Hotline, where the incident was assigned BUST Case Number 92-214-1003-15.

3. Remedial measures implemented at the site entailed the excavation and removal of impacted soil to a varying depth of up to approximately two and one-half feet below the former UST invert level. The impacted soil was segregated, stockpiled atop and covered with plastic sheeting at the site, and subsequently removed and transported to an out of state reuse/recycling facility.

4. In accordance with the Approved Closure Plan, seven soil samples were obtained from the bottom of the excavation and subjected to analysis for total petroleum hydrocarbon concentrations. The results of the analyses indicated that Sample No. 1 contained a TPH concentration of 875 parts per million, whereas Sample Nos. 2 through 7 did not contain TPH concentrations in excess of the NJDEPE Action Levels for #6 heating oil concentrations in soil. Analysis of Sample No. 1A indicated a TPH concentration of 210 ppm. Base neutral extractable compounds analysis of Sample No. 1A revealed that targeted compounds were not detected above analytical instrument detection levels.

CONCLUSIONS/RECOMMENDATIONS

Based on a review of the site assessment results presented above, we recommend the following:

1. Based on the results of the soil sampling and subsequent laboratory chemical analysis performed for this study, it appears soil impacted by the presence of total petroleum hydrocarbons in excess of existing Action Levels have been removed from the former tank location with the exception of the soil in the vicinity of Sample No.1. At this location the TPH concentration was observed to decrease with increasing depth below the existing ground surface grade. In addition, the associated base neutral analysis for the sample obtained from this location did not yield detectable concentrations of carcinogenic polyaromatic hydrocarbons. Consequently, the

observed total petroleum hydrocarbon concentrations do not appear to pose a potential risk to groundwater at the subject site.

2. As the subject tank and piping did not visually appear to contain any holes and/or significant corrosion, the observed discharge is likely the result of historic overfills and/or spills during the course of the operation.

3. The subject UST has been closed in accordance with N.J.A.C. 7:14B-9.2 and consequently should be removed from the NJDEPE Registered Underground Storage Tank Listing.

The following plates, tables and appendices are attached and complete this report:

Plate 1 - Site Location Map
Plate 2 - Cross-sectional View of Site
Plate 3 - Town of Morristown Permit
Plates 4A through 4F - Hazardous Waste Manifests
Plate 5 - Certification of Weight
Plates 6A through 6C - Certification of Soil Recycle and Recycling Facility Permit and
Plate 7 - Soil Sample Location Plan

Table 1 - Summary of Laboratory Analysis Results

Appendix A - Laboratory Analytical Results
Appendix B - Certifications, UST Site Summary Report Form and Standard Reporting Form

Please do not hesitate to contact our office if you have any questions regarding the information contained herein.

Respectfully submitted,
PMK, Ferris & Perricone, Inc.

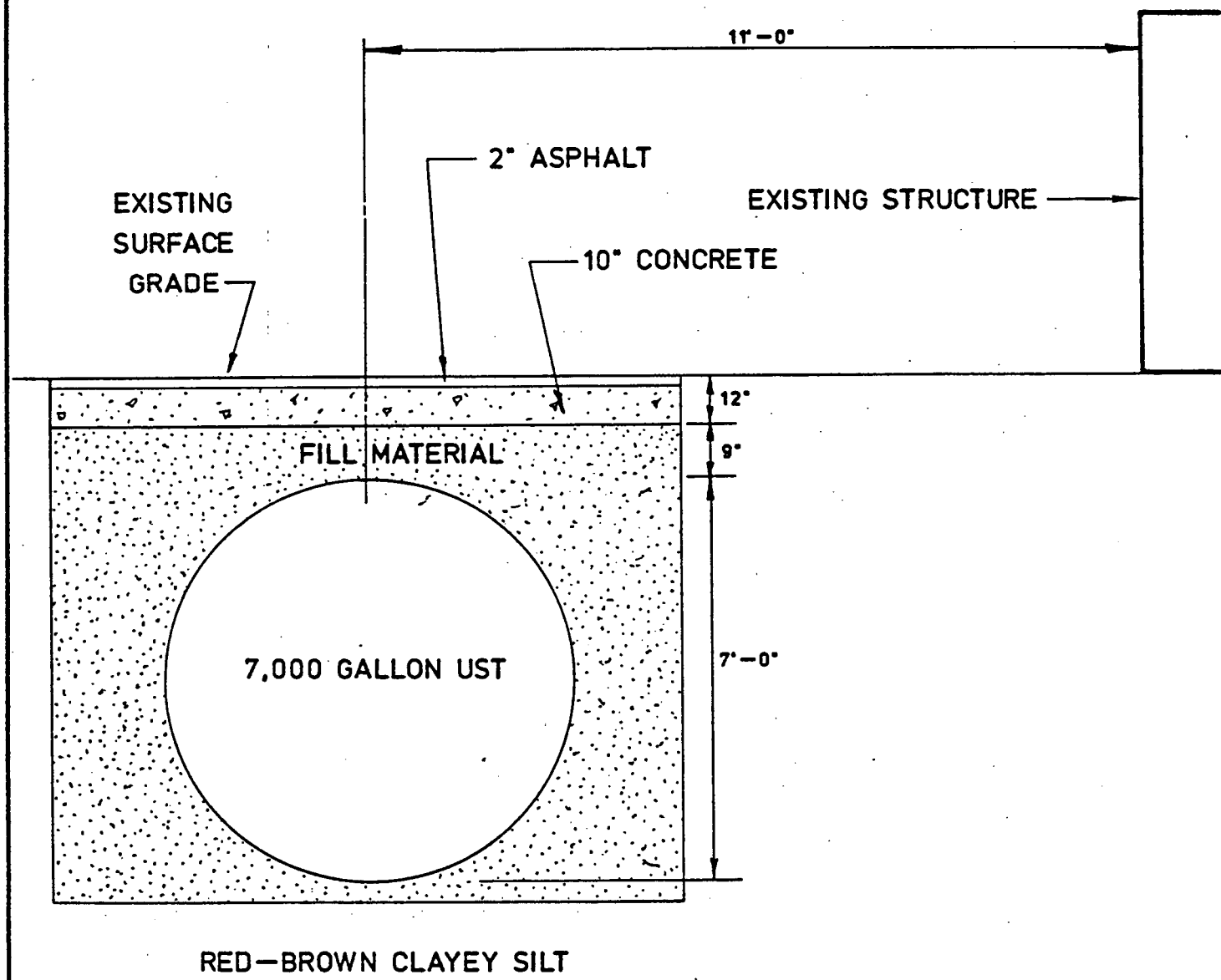
James Johnston, P.E.
Principal

Walter A. Kokola
Project Manager

JJ/WK/gm/1571r8

cc: Peter Austin

ATTACHMENT A13



CROSS-SECTIONAL VIEW OF UST

VIEW FACING NORTH

89 MORRIS STREET
MORRISTOWN, NEW JERSEY

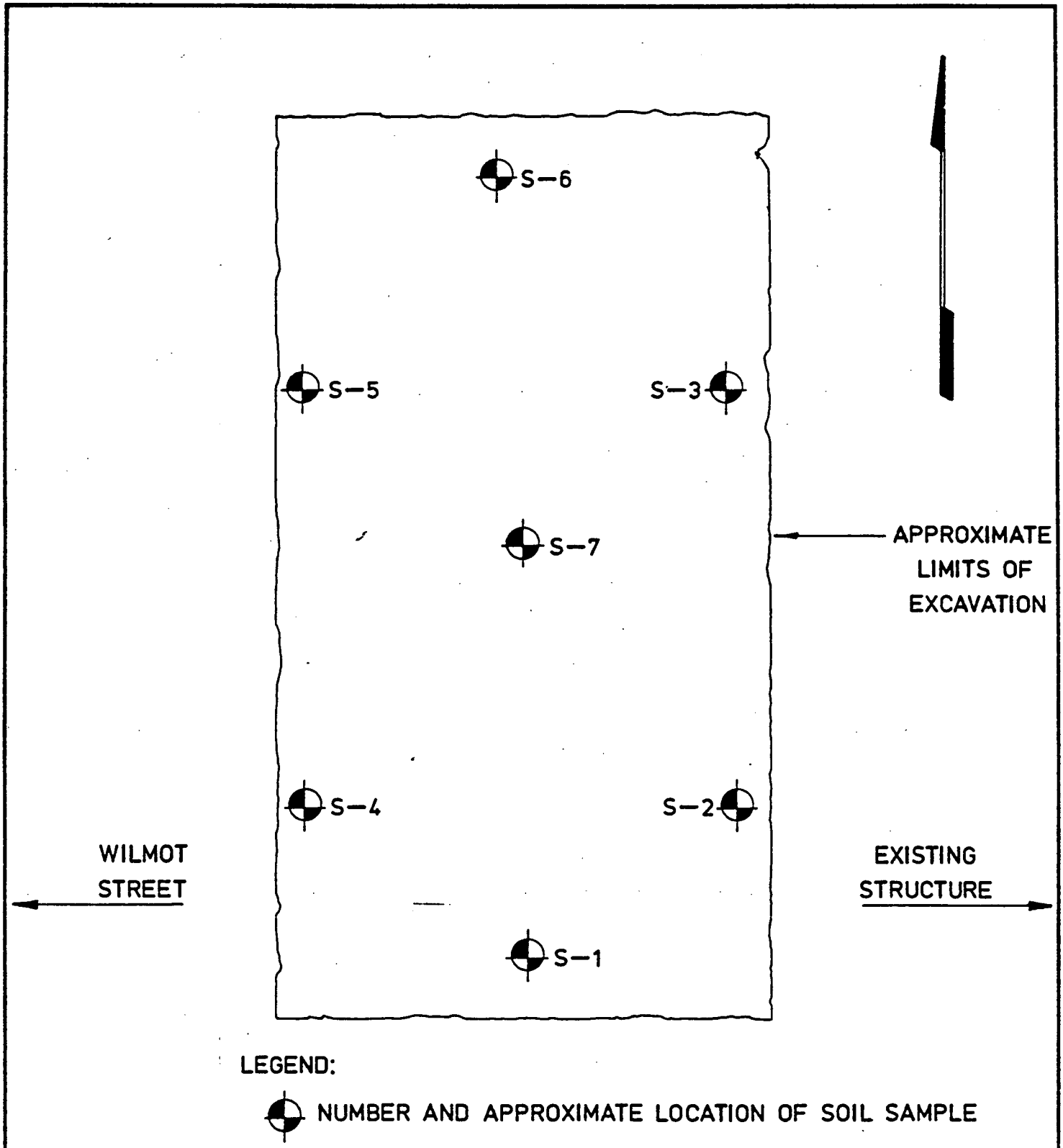
PMK Ferris and Perricone, inc.
CONSULTING ENGINEERS
493 Lehigh Avenue, Union, NJ 07083
(908) 686-0044

DRAWN BY D.M.	DATE 5/4/92
CHECKED BY W.K.	SCALE N.T.S.
PROJECT NO. 5182	SHEET NO.

PMK 015

PLATE 2

ATTACHMENT A14



LEGEND:

NUMBER AND APPROXIMATE LOCATION OF SOIL SAMPLE

SOIL SAMPLE LOCATION PLAN

89 MORRIS STREET
MORRISTOWN, NEW JERSEY

PMK Ferris and Perricone, inc.
CONSULTING ENGINEERS
493 Lehigh Avenue, Union, NJ 07083
(908) 686-0044

DRAWN BY D.M.	DATE 5/4/92
CHECKED BY W.K.	SCALE N.T.S.
PROJECT NO. 5182	SHEET NO.

PMK Group
CONSULTING ENVIRONMENTAL ENGINEERS
COMPLIANCE & REGULATORY MANAGEMENT

PRINCIPALS:
Philip M. Keegan
James Ferris, P.E.
Gerald Perricone, P.E.
James Johnston, P.E.

MANAGING PARTNERS
Terry C. Damon
Robert M. Gerard

November 23, 1992

State of New Jersey
Department of Environmental Protection
and Energy
Division of Responsible Party Site Remediation
CN 028
Trenton, New Jersey 08625-0028

Attention: Mr. David S. Rubin

REMEDIAL INVESTIGATION ADDENDUM REPORT
UNDERGROUND STORAGE TANK REMOVAL
VIP CLEANERS/FORMER MORRISTOWN TIRE FACILITY
89 MORRIS STREET
MORRISTOWN, NEW JERSEY
UST #0228873
TMS #C91-4319
CASE #92-02-14-1003
PMK GROUP #5182

INTRODUCTION

This report presents the results of the supplemental Remedial Investigation activities performed subsequent to the closure and removal of an underground storage tank (UST) system located at 89 Morris Street, Morristown, Morris County, New Jersey. The location of the site is presented on the Site Location Map, Plate 1.

SUMMARY OF PREVIOUS STUDY

The subject 7,000 gallon underground storage tank, which had historically contained #6 heating oil, was excavated and removed from the subject site on February 13, 1992 by Anco Environmental Contracting, Inc., under the direct observation of representatives of the PMK Group (PMK). Subsequent to removal, seven post-excavation soil samples were collected by PMK. Laboratory chemical analysis performed on these samples indicated that Total Petroleum Hydrocarbons (TPH) were detected in one of the samples at a concentration of 875 parts per million (ppm). A subsequent soil sample was collected from this location at a depth of approximately one foot below the previous sample depth, or 10 1/2 feet below the surface grade. Laboratory analysis of this sample revealed TPH at a concentration of 210 parts per million, and no targeted base neutral extractable compounds (BN) were detected at concentrations in excess

ATTACHMENT A16

gof laboratory analytical instrument detection limits. The remaining soil samples obtained for this study revealed TPH concentrations that were observed to either be not detected above analytical instrument detection levels, or to be below the existing Interim NJDEPE Action Level for #6 heating oil of 100 ppm for TPH concentrations in soil.

Based on visual observations of petroleum impacted soils within the excavation during UST closure/removal operations and the subsequent laboratory test results, remedial measures were implemented at the site. The activities entailed the excavation and removal of approximately 130 tons of potentially impacted soil. The excavation operations extended to a varying depth of approximately two and one-half feet below the former UST invert level, or approximately 11 feet below the surface grade. The impacted soil was subsequently transported to an out of state recycling facility. Imported fill material was subsequently utilized to achieve the desired grade.

PURPOSE AND SCOPE OF WORK

Based on the review of the findings contained in the document titled, "Closure Plan Implementation Summary, 89 Morris Street, Morristown, New Jersey" dated May 8, 1992 prepared by the PMK Group, representatives of the New Jersey Department of Environmental Protection and Energy (NJDEPE) issued correspondence dated July 22, 1992, requiring that the following additional remedial activities be performed at the site:

1. Install a groundwater monitoring well in the vicinity of the removed UST, collect representative groundwater samples from the installed well, and submit the samples for laboratory analysis.

2. Conduct a groundwater supply well search within the vicinity of the removed UST to determine the proximity of the same to the potential receptors that may be affected by the potential introduction of contaminants discharged to the groundwater.

The following report sections detail the remedial investigation activities performed by the PMK Group on behalf of Peter Austin, in accordance with the directives of the Department as set forth in the document dated July 22, 1992.

REMEDIAL INVESTIGATION

Monitoring Well Installation

On September 8, 1992, representatives of Summit Drilling Company of Bridgewater, New Jersey (New Jersey well driller license M1212) installed a 2" diameter PVC groundwater monitoring well at the subject site in accordance with the NJDEPE specifications for monitoring well installations in unconsolidated geologic formations. The well was installed to a depth of approximately 22 feet below the existing surface grade in the vicinity of the former UST location. The well was screened across the estimated groundwater level using 0.020" slot PVC screen material, and completed at the ground surface with a flushmount well cover. Subsequent to the installation operations, the well was developed utilizing a centrifugal pump until a clear, sediment-free discharge of groundwater was observed. The development water was collected and containerized.

The groundwater monitoring well installation operations were performed under the direct technical supervision of a representative from PMK Group. Our representative located the well in the field, maintained a continuous log as the exploration was advanced, and supervised the soil sampling procedures in order to develop the required subsurface information. Representative soil samples suitable for identification purposes were collected at closely spaced intervals in accordance with the procedures of the Standard Penetration Test.

Details regarding the subsurface conditions encountered during the well installation operations are presented on the Log of Boring, Plate 2A. The soils have been visually classified in accordance with the Unified Soil Classification System, presented on Plate 2B. Details regarding the construction of the well are presented on the Well Construction Log, Plate 2C. A copy of the NJDEPE Monitoring Well Record as completed by the driller is presented on Plate 2D. The Monitoring Well Construction Certification (Form A) is presented as Plate 2E.

The location of the monitoring well was subsequently certified by a New Jersey licensed land surveyor (N.J.L.S. License No. 26791). The groundwater Monitoring Well Location Certification (Form B) and the copies of the Monitoring Well Location Plot Plan are presented as Plates 3A and 3B.

Groundwater Sampling

On September 24, 1992, over two weeks subsequent to the time of the well installation and development, a representative of the PMK Group was present at the site to obtain groundwater samples from the subject well.

Prior to sampling, our representative performed a measurement of the depth to groundwater within the well casing. No evidence of free product or product odors were detected within the well at that time. A centrifugal pump was then utilized to evacuate approximately three times the volume of water that had been measured to be standing within the well casing. The groundwater samples were then obtained utilizing a laboratory decontaminated teflon bailer in accordance with the groundwater sampling procedures and protocol as detailed in the NJDEPE Field Sampling Procedures Manual. Field and trip blanks were implemented to verify the integrity of the decontamination procedures, and to assess any potential contamination encountered during the transport of the sample containers and samples from and to the analytical laboratory. Standard Chain of Custody procedures were implemented to track the samples. The groundwater samples were placed in laboratory prepared glass sample jars, sealed with teflon-lined lids, placed in a chilled cooler, and transmitted to Envirotech Research Laboratories in Edison, New Jersey (NJDEPE Certified Lab Number 12543), where they were subsequently subjected to analysis for the potential presence of base neutral compounds plus the identification of 15 non-targeted compounds (EPA method 625+15) and volatile organic compounds plus the identification of 15 non-targeted compounds (EPA method 624+15).

Laboratory Analysis Results

The results of the laboratory chemical analyses performed on the groundwater samples collected on September 24, 1992 from the monitoring well at the subject site indicate that trichloroethene, tetrachloroethene and trans-1,2-dichloroethene were present in the groundwater sample at respective concentrations of 58 parts per billion (ppb), 510 ppb and 69 ppb. The concentrations of trichloroethene and tetrachloroethene were observed to be in excess of the proposed NJDEPE cleanup standards for Class II A groundwater. In addition, tentatively identified compounds were present in the collected groundwater sample. In the analysis for base neutral compounds, tetrachloroethene was identified to be present in a concentration of 99 ppb. Three additional, unidentified base neutral compounds were detected in concentrations ranging from 6 to 10 ppb.

No additional targeted or non-targeted volatile organic or base neutral compounds were observed to be present at concentrations above the laboratory analytical instrument detection limits. In addition, neither volatile organic compounds nor base neutral compounds were detected in the field or trip blank. A summary of the laboratory analysis results for the collected groundwater sample is presented on Table 1.

The results of the laboratory analysis and the chain of custody documents are presented in Appendix A.

NJDEPE Well Search

A search of NJDEPE permitted groundwater supply well records was performed to determine the potential presence of permitted residential wells within a one-half mile radius, and permitted industrial wells within a one mile radius of the subject site.

Based on the information provided in the well records obtained from the NJDEPE Bureau of Water Allocation, the following observations were noted:

1. Three permitted domestic groundwater supply wells are located within a radial distance of one-half mile from the subject site.

2. Seven permitted industrial and/or commercial groundwater supply wells are located within a radial distance of one mile from the subject site.

3. A Morristown Water Company municipal water supply well is located approximately one mile southeast of the subject site.

The well locations are presented on the Well Radius Map, Plate 4A. A listing of the wells, including their nature and location, is presented as the Summary of Groundwater Supply Wells, Plate 4B. The well registration forms as provided by the NJDEPE Bureau of Water Allocation are presented as Appendix B.

To supplement the well search, representatives of the Town of Morristown were contacted to determine the potential presence of known additional, non-permitted groundwater supply wells that may be located in the vicinity of the subject site. According to Kevin Cray of the Morristown Health Department, a well that is utilized for a backup water supply at Morristown Memorial Hospital is the only known groundwater supply well in the Town, according to Department records. Other facilities in Morristown supplied by the municipal water system.

The present property owner identified a potential groundwater supply well that was utilized in an historic commercial laundry that had been located at the subject site. According to Peter Austin, the site owner, the referenced well had not been utilized for over ten years. However, the well has not been formally closed and sealed. This well was not observed to be included in the listing of permitted wells as supplied by the NJDEPE. No other evidence indicative of the existence of groundwater supply wells in the vicinity of the subject site was observed by our representative.

Additionally, a review of the United States Geological Survey 7.5 Minute Series Morristown Quadrangle Topography Map was performed to evaluate the potential presence of surface water bodies and water courses in the vicinity of the subject site. Based on this review, it appears that a portion of the Whippany River is located approximately one-quarter to one-half miles north of the subject site. This watercourse is fed by Lake Pocahontas, which is located between one-half and one mile north of the subject site. No other surface water bodies were observed to be located within an approximate radial distance of one-half mile from the subject site.

SUPPLEMENTAL REMEDIAL INVESTIGATION RESULTS

Based on the information obtained during the groundwater monitoring well installation and sampling operations performed at the subject site and a review of the results of the laboratory analysis performed on the groundwater samples collected from the subject well, as well as the review of the provided NJDEPE well search records, we have determined the following:

1. A groundwater monitoring well was installed at the subject site on September 8, 1992 by a New Jersey licensed well driller. The subject well was installed in the vicinity of the historic UST that had been previously excavated and removed.

2. Representative groundwater samples obtained from the subject well on September 24, 1992 were analyzed by a NJDEPE certified laboratory. The results of the sample analyses for base neutral and volatile organic compounds indicated that trichloroethene, tetrachloroethene, and trans-1,2-dichloroethene were detected to be present in concentrations ranging from 58 to 510 parts per billion. The trichloroethene and tetrachloroethene concentrations were observed to be in excess of proposed groundwater cleanup standards.

3. A search of records of permitted groundwater supply wells that had been installed in the vicinity of the subject site, as provided by the NJDEPE Bureau of Water Allocation, indicated that three domestic groundwater supply wells are located within one-half mile and seven industrial/commercial groundwater supply wells are located within one mile of the subject site, and one municipal water supply well is located approximately one mile southeast of the subject site. Additionally, a groundwater supply well that was once utilized in an historic commercial laundry was observed at the subject site. One surface watercourse was observed to be located within one-half mile of the subject site.

CONCLUSIONS/RECOMMENDATIONS

Based on the findings listed above, we present the following conclusions:

1. Upon review of the nature and relative concentrations of the contaminants detected within the groundwater samples collected at the subject site, it does not appear that the discharges from the subject underground storage tank formerly located at the subject site has impacted the groundwater at the subject site. Consequently, the underground storage tank case should be closed.

2. Based on the nature and concentrations of the contaminants detected to be present within the groundwater sample collected from the monitoring well installed at the subject site, the contaminants are likely related to existing or historical dry cleaning operations at the site. In addition, there exists the potential that the same is the result of an off-site source.

The conclusions presented above indicate that the discharge from the subject UST has not impacted the groundwater at the subject site. Consequently, we recommend that no further remedial activity relative to the UST closure is necessary at the subject site.

Please do not hesitate to contact our office should you have any questions regarding the information presented in this report.

The following attachments are enclosed and complete this report:

Plate 1 – Site Location Map
Plate 2A – Log of Boring
Plate 2B – Unified Soil Classification System
Plate 2C – Well Construction Log
Plate 2D – NJDEPE Monitoring Well Record
Plate 2E – Monitoring Well Construction Certification
Plate 3A – Groundwater Monitoring Well Location Certification
Plate 3B – Monitoring Well Location Plot Plan
Plate 4A – Well Radius Map
Plate 4B – Summary of Groundwater Supply Wells

Table 1 – Summary of Laboratory Analysis Results

Appendix A – Laboratory Analysis Results
Appendix B – NJDEPE Well Registration Forms

Respectfully submitted,
PMK Group

James Johnston

James Johnston, P.E.
Vice President

Walter A. Kokola

Walter A. Kokola
Project Geologist

JJ/WK/kh/2086r8

ATTACHMENT A23

ATTACHMENT B

TABLE 1

SUMMARY OF LABORATORY ANALYSIS RESULTS

Facility Name, Address: Former Morristown Tire Facility
89 Morris Street
Morristown, New Jersey 07960

Facility Owner, Address: P. Austin and W. Austin
Post Office Box 29
Morris Plains, New Jersey 07950

UST Registration Number: UST-0228873

UST Closure Approval: C-91-4319

BUST Discharge Case: 91-214-1003-15

Laboratory and Field Sample IDs:	63783 S1	63784 S2	63785 S3	63786 S4	63787 S5	63788 S6	63789 S7	63897 S1A
Sample Locations:	South Wall	SE Wall	NE Wall	SW Wall	NW Wall	North Wall	Pit Bottom	South Wall
Depth of sample: (below ground surface, in feet)	9.5	9.5	9.5	9.5	9.5	9.5	10.5	10.5
Matrix Analyzed:	Soil	Soil	Soil	Soil	Soil	Soil	Soil	Soil
Parameters Analyzed:	TPH	TPH	TPH	TPH	TPH	TPH	TPH	TPH/ BN+15
Results (concentrations in PPM):	875	ND	ND	ND	74	ND	ND	210/ ND

Test Methods Used: EPA Method 418.1 (Total Petroleum Hydrocarbons),
EPA Method 8270 (Base Neutral Extractable Organics)

Dates that Samples Were Collected: February 20, 1992 (all except 1A)
February 21, 1992 (Sample 1A)

Dates that Samples Were Transmitted to Laboratory: February 20, 1992 (all except 1A)
February 21, 1992 (Sample 1A)

Name, Address of Laboratory which Performed the Sample Analyses: Envirotech Research, Inc.
777 New Durham Road
Edison, New Jersey 08817

NJDEPE Laboratory Certification Number: 12543

Date of Laboratory Report: March 3, 1992/March 10, 1992

Person Completing Laboratory Report: Michael J. Urban, Manager

TPH: Total Petroleum Hydrocarbons PPM: Parts per Million
BN+15: Base Neutral Extractable Compounds

ATTACHMENT B1

PMK Ferris & Perricone, Inc.
493 Lehigh Avenue
Union, NJ 07083
Attention: Mr. Walter Kokola

Report Date: 3/3/92
Job No.: B066 - Peter Austin
N.J. Certified Lab No. 12543
QA Batch 2283

PETROLEUM HYDROCARBONS

Envirotech Sample #	Client ID	% Solid	Petroleum Hydrocarbons mg/kg (Dry Wt.)
63783	S1	81.7	875
63784	S2	83.3	ND
63785	S3	82.4	ND
63786	S4	84.9	ND
63787	S5	82.2	74
63788	S6	83.3	ND
63789	S7	84.1	ND
63790	Soil Pile	91.1	36700

Detection Limit for Petroleum Hydrocarbons is 25 mg/kg.

ATTACHMENT B2

ENVIROTECH RESEARCH, INC.

777 New Durham Road
Edison, New Jersey 08817
Tel: (908) 549-3900
Fax: (908) 549-3679

March 3, 1992

PMK Ferris & Perricone, Inc.
493 Lehigh Avenue
Union, NJ 07083

Attention: Mr. Walter Kokola

Re: Job No. B066 - Peter Austin

Dear Mr. Kokola:

Enclosed are the results you requested for the following samples taken 12/20/92:

Lab No.	Client ID	Analysis Requested
63783	S1, 9 1/2	PHC
63784	S2, 9 1/2	PHC
63785	S3, 9 1/2	PHC
63786	S4, 9 1/2	PHC
63787	S5, 9 1/2	PHC
63788	S6, 9 1/2	PHC
63789	S7, 10 1/2	PHC
63790	Soil Pile	PHC

An invoice for our services is also enclosed. Please call me at 549-3900 if you have any questions.

Very truly yours,

Michael J. Urban
Laboratory Manager

ATTACHMENT B3

ENVIROTECH RESEARCH, INC.

777 New Durham Road
Edison, New Jersey 08817
Tel: (908) 549-3900
Fax: (908) 549-3679

March 10, 1992

PMK Ferris & Perricone, Inc.
493 Lehigh Avenue
Union, NJ 07083

Attention: Mr. Walter Kokola

Re: Job No. B084● - Peter Austin

Dear Mr. Kokola:

Enclosed are the results you requested for the following sample taken 2/21/92:

Lab No.	Client ID	Analysis Requested
63897	S1A	BN +15 & PHC

An invoice for our services is also enclosed. Please call me at 549-3900 if you have any questions.

Very truly yours,

Michael J. Urban
Laboratory Manager

ENVIROTECH RESEARCH, INC.

PMK Ferris & Perricone, Inc.
493 Lehigh Avenue
Union, NJ 07083
Attention: Mr. Walter Kokola

Report Date: 3/10/92
Job No.: B084 - Peter Austin
N.J. Certified Lab No. 12543
QA Batch 2283

PETROLEUM HYDROCARBONS

Envirotech Sample #	Client ID	% Solid	Petroleum Hydrocarbons mg/kg (Dry Wt.)
63897	S1A	80.9	210

Detection Limit for Petroleum Hydrocarbons is 25 mg/kg.

ATTACHMENT B5

PMK Ferris & Perricone, Inc.
493 Lehigh Avenue
Union, NJ 07083
Attention: Mr. Walter Kokola

Report Date: 3/10/92
Job No.: B084 - Peter Austin
N.J. Certified Lab No. 12543
QA Batch 1774

BASE/NEUTRAL EXTRACTABLES

Parameter	Lab No. 63897 Client ID: S1A 80.9% Solid Units: ug/kg (Dry Weight)	Detection Limit Units: ug/kg
1,3-Dichlorobenzene	ND	330
1,4-Dichlorobenzene	ND	330
Hexachloroethane	ND	330
Bis(2-chloroethyl) ether	ND	330
1,2-Dichlorobenzene	ND	330
Bis(2-chloroisopropyl) ether	ND	330
N-Nitrosodi-n-propylamine	ND	330
Nitrobenzene	ND	330
Hexachlorobutadiene	ND	330
1,2,4-Trichlorobenzene	ND	330
Isophorone	ND	330
Naphthalene	ND	330
Bis(2-chloroethoxy) methane	ND	330
Hexachlorocyclopentadiene	ND	330
2-Chloronaphthalene	ND	330
Acenaphthylene	ND	330
Acenaphthene	ND	330
Dimethyl phthalate	ND	330
2,6-Dinitrotoluene	ND	330
Fluorene	ND	330
4-Chlorophenyl phenyl ether	ND	330
2,4-Dinitrotoluene	ND	330
Diethylphthalate	ND	330
N-Nitrosodiphenylamine	ND	330
Hexachlorobenzene	ND	330

ATTACHMENT B6

PMK Ferris & Perricone, Inc.
493 Lehigh Avenue
Union, NJ 07083
Attention: Mr. Walter Kokola

Report Date: 3/10/92
Job No.: B084 - Peter Austin
N.J. Certified Lab No. 12543
QA Batch 1774

BASE/NEUTRAL EXTRACTABLES (con't)

Parameter	Lab No. 63897 Client ID: S1A 80.9% Solid Units: ug/kg (Dry Weight)	Detection Limit Units: ug/kg
4-Bromophenyl phenyl ether	ND	330
Phenanthrene	ND	330
Anthracene	ND	330
Dibutyl phthalate	ND	330
Fluoranthene	ND	330
Pyrene	ND	330
Benzidine	ND	670
Butyl benzyl phthalate	ND	330
Bis(2-ethylhexyl) phthalate	ND	330
Chrysene	ND	330
Benzo(a)anthracene	ND	330
3,3'-Dichlorobenzidine	ND	670
Di-n-octyl phthalate	ND	330
Benzo(b)fluoranthene	ND	330
Benzo(k)fluoranthene	ND	330
Benzo(a)pyrene	ND	330
Indeno(1,2,3-c,d)pyrene	ND	330
Dibenzo(a,h)anthracene	ND	330
Benzo(ghi)perylene	ND	330
N-Nitrosodimethylamine	ND	330

ATTACHMENT B7

W.A.T.E.R. WORKS LABORATORY INC.
364 Glenwood Ave., East Orange, NJ 07017
(201) 678-3787 FAX (201) 678-6779

LABORATORY ANALYSIS REPORT

DATE : FEBRUARY 17, 1992
CLIENT: ANCO ENVIRONMENTAL

SAMPLE COLLECTED: 2/13/92
SAMPLE RECEIVED: 2/13/92
GENERATOR : PETE AUSTIN
88 MORRIS AVE
MORRISTOWN, NJ

CLIENT ID # : SAMPLE NUMBER	MDL	PETE AUSTIN 25116	EXTRACTION METHOD #	ANALYSIS METHOD #
TCLP METALS			**	
ARSENIC	0.01	ND		7060
BARIUM	0.01	0.32		7081
CADMIUM	0.01	ND		7130
CHROMIUM	0.03	0.12		7190
LEAD	0.03	ND		7421
MERCURY	0.001	ND		7471
SELENIUM	0.01	ND		7740
SILVER	0.01	ND		7760
pH, Corrosivity		7.47		9045
TPH	200	9350		418.1*
% SOLIDS		88.3		
FLASHPOINT		> 140 F		1010
REACTIVE CYANIDE	1.0	ND		SW826
REACTIVE SULFIDE	1.6	ND		SW826
PCB-1016	0.02	ND	3550	8080
PCB-1221	0.02	ND	3550	8080
PCB-1232	0.02	ND	3550	8080
PCB-1242	0.02	ND	3550	8080
PCB-1248	0.02	ND	3550	8080
PCB-1254	0.02	ND	3550	8080
PCB-1260	0.02	ND	3550	8080
BENZENE	0.03	ND	5030	8240
ETHYLBENZENE	0.03	0.12	5030	8240
TOLUENE	0.03	0.04	5030	8240
XYLENES	0.03	0.32	5030	8240

STEPHEN KROEMER
LABORATORY MANAGER

All Results Reported As ppm
MDL = Method Detection Limit
ND = Not Detected Above MDL
* = EPA-600/4-79-020 March 1979
** MARCH 1990 40 CFR 261 Pg 11865

PMK Ferris & Perricone, Inc.
493 Lehigh Avenue
Union, NJ 07083
Attention: Mr. Walter Kokola

Report Date: 3/3/92
Job No.: B066 - Peter Austin
N.J. Certified Lab No. 12543
QA Batch 2281

PETROLEUM HYDROCARBONS

Envirotech Sample #	Client ID	% Solid	Petroleum Hydrocarbons mg/kg (Dry Wt.)
63790	Soil Pile (reanalysis)	91.1	36900

Detection Limit for Petroleum Hydrocarbons is 25 mg/kg.

ATTACHMENT B9

ENVIROTECH RESEARCH, INC.

PMK Ferris & Perricone, Inc.
493 Lehigh Avenue
Union, NJ 07083
Attention: Mr. Walter Kokola

Report Date: 10/19/92
Job No.: C518
N.J. Certified Lab No. 12543
QA Batch 2745A

VOLATILE ORGANICS

Parameter	Lab No. 73838 Client ID: MW 1 Units: ug/l	Quantitation Limit Units: ug/l
Benzene	ND	50
Bromodichloromethane	ND	50
Bromoform	ND	50
Bromomethane	ND	100
Carbon tetrachloride	ND	50
Chlorobenzene	ND	50
Chloroethane	ND	100
2-Chloroethylvinyl ether	ND	100
Chloroform	ND	50
Chloromethane	ND	100
Dibromochloromethane	ND	50
1,1-Dichloroethane	ND	50
1,2-Dichloroethane	ND	50
1,1-Dichloroethene	ND	50
trans-1,2-Dichloroethene	69	50
1,2-Dichloropropane	ND	50
cis-1,3-Dichloropropene	ND	50
trans-1,3-Dichloropropene	ND	50
Ethyl benzene	ND	50
Methylene chloride	ND	50
1,1,2,2-Tetrachloroethane	ND	50
Tetrachloroethene	510	50
Toluene	ND	50
1,1,1-Trichloroethane	ND	50
1,1,2-Trichloroethane	ND	50
Trichloroethene	58	50
Trichlorofluoromethane	ND	50
Vinyl chloride	ND	100
Xylenes (Total)	ND	50

ATTACHMENT B10

PMK Group

TABLE 1

SUMMARY OF LABORATORY ANALYSIS RESULTS
89 MORRIS STREET
MORRISTOWN, NEW JERSEY
PMK GROUP #5182

Sample Location	Sample Date	Medium Sampled	Detected Parameters	Detected Concentration (ppb)
Groundwater monitoring well #MW-1	9/24/92	Groundwater	Volatile Organic Compounds:	
			Trichloroethene	58
			Tetrachloroethene	510
			Trans-1,2-dichloroethene	69
			Base neutral analysis:	
			Tentatively Identified Compounds	
			Tetrachloroethene	94
			Unknown base neutral compound	10
			Unknown base neutral compound	8
			Unknown base neutral compound	6

ATTACHMENT B11

ATTACHMENT C

⊕ SUBJECT SITE LOCATION

WELL LOCATIONS ARE APPROXIMATE

0 1/2 mi. 1 mi.

WELL RADIUS MAP

89 MORRIS STREET
MORRISTOWN, NEW JERSEY

PMK Group
CONSULTING ENGINEERS
493 Lehigh Avenue, Union, NJ 07083
908-686-0044

DRAWN BY W.K.	DATE 11/23/92
CHECKED BY W.K.	SCALE AS SHOWN
PROJECT NO. 5182	SHEET NO

SUMMARY OF GROUNDWATER SUPPLY WELLS
89 MORRIS STREET
MORRISTOWN, NEW JERSEY
PMK GROUP # 5182

WELL NO.	OWNER, LOCATION	N. J. ATLAS COORDINATES	PERMIT NO.	WELL UTILIZATION	WELL DEPTH	PUMPING DEPTH	YEAR INSTALLED
1	MAC COLLOUGH HALL 45 MAC COLLOUGH AVENUE	25-13-397	25-13043	DOMESTIC	150	74	1965
2	GEORGE GALLINI BLOCK 1059, LOT 30.2	25-13-697	25-25876	DOMESTIC	320	250	1985
3	POWERS MOTOR COMPANY 44 RIDGEDALE AVENUE	25-13-635	25-32177	IRRIGATION	298	80	1988
4	MAC COLLOUGH HALL 45 MAC COLLOUGH AVENUE	25-13-629	25-13043	DOMESTIC	155	74	1965
5	BENEFICIAL MANAGEMENT 200 SOUTH STREET	25-13-617	25-15508	COOLING	500	273	1971
6	TOWN OF MORRISTOWN WELL NO. 5-LIDGERWOOD	25-13-664	25-14520	MUNICIPALITY	265	150	1967
7	BENEFICIAL PROPERTIES 15 WASHINGTON STREET	25-13-663	25-3936	COOLING	500	150	1955
8	MORRISTOWN WATER CO. JOHNSON DRIVE AT TURTLE ROAD	25-14-142	25-13439	MUNICIPAL	496	191	1966
9	TECH ART PLASTICS CO. 111 RIDGEDALE ROAD	25-14-177	25-8717	INDUSTRIAL	163	150	1961
10	B. W. B. CORPORATION 16 RIDGEDALE AVENUE	25-14-177	25-15756	CAR WASH	350	275	1972
11	T. LANDI AND SON RIDGEDALE AVENUE	25-14-178	25-3701	WASHING GRAVEL	48	48	1955

NOTES:
ALL LOCATIONS ARE IN MORRISTOWN/MORRIS TOWNSHIP, NEW JERSEY
INDICATED WELL UTILIZATION IS AT THE TIME OF INSTALLATION
INDICATED DEPTHS ARE IN FEET BELOW THE SURFACE GRADE ELEVATION

PLATE 4B

ATTACHMENT C2

(1) 25-13-397

FORM 87

DEPARTMENT OF CONSERVATION
AND ECONOMIC DEVELOPMENT
DIVISION OF WATER POLICY & SUPPLY

Permit No. 25/13043
Application No. _____
County MORRIS

WELL RECORD

1. OWNER ~~xxxxxx~~ Mac Collough Hall Museum ADDRESS 45 Mac Collough Ave, Morristown, N.J.
   Owner's Well No. 2587 SURFACE ELEVATION _____ Feet (Above mean sea level)
2. LOCATION Same as above Morris Twp
3. DATE COMPLETED 7/15/65 DRILLER D.F. Well Drilling Co., Netcong, N.J.
4. DIAMETER: top _____ Inches Bottom _____ Inches TOTAL DEPTH 155 Feet
5. CASING: Type Solid steel Diameter _____ Inches Length 150 Feet
6. SCREEN: Type _____ Size of Opening ___ Diameter _____ Inches Length _____ Feet
   Range in Depth { Top _____ Feet / Bottom _____ Feet } Geologic Formation _____
   Tail piece: Diameter _____ Inches Length _____ Feet
7. WELL FLOWS NATURALLY _____ Gallons per Minute at _____ Feet above surface
   Water rises to _____ Feet above surface
8. RECORD OF TEST: Date ~~7/9/65~~ 7/16/65 Yield 24+ Gallons per minute
   Static water level before pumping 74 Feet below surface
   Pumping level 74 feet below surface after 1 hours pumping
   Drawdown 0 Feet Specific Capacity _____ Gals. per min. per ft. of drawdown
   How Pumped _____ How measured _____
   Observed effect on nearby wells _____
9. PERMANENT PUMPING EQUIPMENT:
   Type _____ Mfrs. Name _____
   Capacity _____ G.P.M. How Driven _____ H.P. _____ R.P.M. _____
   Depth of Pump in well _____ Feet Depth of Footpiece in well _____ Feet
   Depth of Air Line in well _____ Feet Type of Meter on Pump _____ Size ___ Inches
10. USED FOR Domestic AMOUNT { Average _____ Gallons Daily / Maximum _____ Gallons Daily }
11. QUALITY OF WATER _____ Sample: Yes ___ No. ___
    Taste _____ Odor _____ Color _____ Temp. _____ °F
12. LOG _____ Are samples available? _____
    (Give details on back of sheet or on separate sheet. If electric log was made, please furnish copy)
13. SOURCE OF DATA _____
14. DATA OBTAINED BY Donald J. McBride Date 7/31/65

ATTACHMENT C3

(NOTE: Use other side of this sheet for additional information such as log of materials penetrated.)

Form DWR- 138
11/80

STATE OF NEW JERSEY
DEPARTMENT OF ENVIRONMENTAL PROTECTION
DIVISION OF WATER RESOURCES

Coord: 2513637

PERMIT NO. 2525876

APPLICATION NO. _____

COUNTY Morris

(2)

WELL RECORD

1. OWNER GALLINI, GEORGE ADDRESS 510 MILLBURN AVE.

Owner's Well No. _____ SURFACE ELEVATION _____ Feet (Above mean sea level)

2. LOCATION Lot: 30.2 Block: 1059 Municipality: Morris Twp.

3. DATE COMPLETED March 15, 1985 DRILLER Somerville Well Drilling Co.

4. DIAMETER: Top 10 inches Bottom 6" inches TOTAL DEPTH 320' Feet

5. CASING: Type Drive Diameter 6" Inches Length 190' Feet

6. SCREEN: Type _____ Size of Opening _____ Diameter _____ Inches Length _____ Feet

Range in Depth { Top _____ Feet / Bottom _____ Feet Geologic Formation _____

Tail Piece: Diameter _____ Inches Length _____ Feet

7. WELL FLOWS NATURALLY _____ Gallons per minute at _____ Feet above surface

Water rises to _____ Feet above surface

8. RECORD OF TEST: Date March 15, 1985 Yield 20 Gallons per minute

Static water level before pumping 65' Feet below surface

Pumping level 250' feet below surface after 8 hours pumping

Drawdown 185' Feet Specific Capacity 2 Gals. per min. per ft. of drawdown

How pumped Air How measured Weir

Observed effect on nearby wells none

9. PERMANENT PUMPING EQUIPMENT:

Type _____ Mfrs. Name _____

Capacity _____ G.P.M. How Driven _____ H.P. _____ R.P.M. _____

Depth of Pump in well _____ Feet Depth of Footpiece in well _____ Feet

Depth of Air Line in well _____ Feet Type of Meter on Pump _____ Size _____ Inches

10. USED FOR Domestic AMOUNT { Average _____ Gallons Daily / Maximum _____ Gallons Daily

11. QUALITY OF WATER good Sample: Yes _____ No X

Taste none Odor none Color clear Temp. _____ °F.

12. LOG 0-190 overburden 190-320 Are samples available? No

(Give details on back of sheet or on separate sheet. If electric log was made, please furnish copy.)

13. SOURCE OF DATA Somerville Well Drilling Co., Inc.

14. DATA OBTAINED BY Same Date March 15, 1985

(NOTE: Use other side of this sheet for additional information such as log of materials penetrated, analysis of the water, sketch map, sketch of special casing arrangements, etc.)

ATTACHMENT CA

Form DWR-138
11/85

NEW JERSEY DEPARTMENT OF ENVIRONMENTAL PROTECTION
DIVISION OF WATER RESOURCES

3

WELL RECORD

Well Permit No. 25 – 32177
Atlas Sheet Coordinates 25 : 13 : 635

OWNER IDENTIFICATION - Owner POWERS MOTOR COMPANY
Address 44 RIDGEDALE AVE
City MORRISTOWN State NJ Zip Code 07960

WELL LOCATION - If not the same owner please give address. Owner's Well No. _____
Address 44 Ridgedale Ave.
County Morris Municipality ~~MORRISTOWN TOWN~~ Lot No. ~~11-17~~ Block No. 1901

WELL USE Withdrawal - For Water Supply Status Standby

WATER USE Irrigation Average _____ gals. daily Maximum _____ gals. daily

WELL CONSTRUCTION
BOREHOLE DIMENSIONS
Date well completed 9 / 9 / 88
Depths: Total 298 ft. Finished _____ ft.
Diameter: Top 10 in. Bottom 6" in.

Land Surface Elevation at well 400 ft. Elevation was determined using Topographic Map #25
Casing Height (stick-up) above land surface 1 1/2 ft.

	DEPTH TO TOP (FT.)	LENGTH (FT.)	DIAMETER (IN.)	TYPE AND MATERIAL *Screens: Note Slot Size(s)*
Casing 1		190	6"	.250 Wall Steel
Casing 2				
Casing 3				
Screen 1				
Screen 2				
Tail Piece				
Gravel Pack				
Grout				
Grouting Method		drill + Drive		

WELL FLOWS NATURALLY _____ gals. per min. at _____ ft. above the land surface.
Water rises to _____ ft. above the land surface.

RECORD OF TEST Test Date 9 / 9 / 88
Static water-level before pumping 80' ft. below land surface. Water level _____ ft. below land surface after ____ hrs. of pumping.
Water level was measured using Estimated Drawdown _____ ft.
Discharge rate measured using Estimated Discharge Rate 40+ gals. per min.
Well was pumped using air Specific Capacity _____ gals. per min. per ft. of drawdown
Observed effects on nearby wells _____
Water Quality (taste, odor, color, etc.) _____

PERMANENT PUMPING EQUIPMENT Installed by Not Installing Pump Type _____
Mfrs. Name _____ Model _____
CAPACITY: Pump delivers _____ GPM at _____ PSI pressure.
POWER: _____ HP at _____ RPM Power Source _____
DEPTHS: Pump _____ ft. Footpiece _____ ft. Airline _____ ft.
FLOW METER: Model _____ installed on _____ in. diameter pipe.

CONTRACTOR - Name of Drilling Contractor DAN BALLENTINE
Address P.O. Box 178, Port Murray Road
City Port Murray State N.J. Zip Code 07865-0178
Name of Driller Robert Hagen License No. 1246

Signature of Contractor _____ Date 9 / 26 / 88

COPIES: White - DEP Canary - Driller Pink - Owner Goldenrod - Health Dept.

ATTACHMENT C5

(4) 25-13-629

FORM 87

DEPARTMENT OF CONSERVATION
AND ECONOMIC DEVELOPMENT
DIVISION OF WATER POLICY & SUPPLY

Permit No. 25-13,043
Application No. _____
County _____

WELL RECORD

1. OWNER ~~Xxxxxxx~~ Mac Collough Hall Museum ADDRESS 45 Mac Collough Ave, Morristown, N.J.
   Owner's Well No. 2537 SURFACE ELEVATION _____ Feet (Above mean sea level)
2. LOCATION Same as above
3. DATE COMPLETED 7/15/65 DRILLER D.F. Well Drilling Co., Netcong, N.J.
4. DIAMETER: top _____ Inches Bottom _____ Inches TOTAL DEPTH 155 Feet
5. CASING: Type Solid steel Diameter _____ Inches Length 150 Feet
6. SCREEN: Type _____ Size of Opening ___ Diameter _____ Inches Length _____ Feet
   Range in Depth { Top _____ Feet / Bottom _____ Feet } Geologic Formation _____
   Tail piece: Diameter _____ Inches Length _____ Feet
7. WELL FLOWS NATURALLY _____ Gallons per Minute at _____ Feet above surface
   Water rises to _____ Feet above surface
8. RECORD OF TEST: Date ~~7/9/65~~ 7/16/65 Yield 24+ Gallons per minute
   Static water level before pumping 74 Feet below surface
   Pumping level 74 feet below surface after 1 hours pumping
   Drawdown 0 Feet Specific Capacity _____ Gals. per min. per ft. of drawdown
   How Pumped _____ How measured _____
   Observed effect on nearby wells _____
9. PERMANENT PUMPING EQUIPMENT:
   Type _____ Mfrs. Name _____
   Capacity _____ G.P.M. How Driven _____ H.P. _____ R.P.M. _____
   Depth of Pump in well _____ Feet Depth of Footpiece in well _____ Feet
   Depth of Air Line in well _____ Feet Type of Meter on Pump _____ Size ___ Inches
10. USED FOR Domestic AMOUNT { Average _____ Gallons Daily / Maximum _____ Gallons Daily }
11. QUALITY OF WATER _____ Sample: Yes ___ No. ___
    Taste _____ Odor _____ Color _____ Temp. _____ °F
12. LOG _____ Are samples available? _____
    (Give details on back of sheet or on separate sheet. If electric log was made, please furnish copy)
13. SOURCE OF DATA _____
14. DATA OBTAINED BY Donald J. McBride Date 7/31/65

ATTACHMENT C/D

(NOTE: Use other side of this sheet for additional information such as log of materials penetrated, ...)

25-13-617

FORM 87

DEPARTMENT OF CONSERVATION
AND ECONOMIC DEVELOPMENT
DIVISION OF WATER POLICY & SUPPLY

(5)

Permit No. 25-15508
File Application No. A25-77
County

WELL RECORD

1. OWNER Beneficial Management ADDRESS 200 South St. Morristown, N. J.
Owner's Well No. #2 SURFACE ELEVATION 360 Feet (Above mean sea level)
2. LOCATION So Street. Morristown, New Jersey
3. DATE COMPLETED May 1971 DRILLER Burrows Well Drilling Co., Inc.
4. DIAMETER: top 8 Inches Bottom 8 Inches TOTAL DEPTH 500' Feet
5. CASING: Type 209 Diameter 8 Inches Length 209 Feet
6. SCREEN: Type None Size of Opening ___ Diameter ___ Inches Length ___ Feet
Range in Depth { Top ___ Feet / Bottom ___ Feet Geologic Formation ___
Tail piece: Diameter ___ Inches Length ___ Feet
7. WELL FLOWS NATURALLY No Gallons per Minute at ___ Feet above surface
Water rises to ___ Feet above surface
8. RECORD OF TEST: Date 7-16-70 Yield 133 Gallons per minute
Static water level before pumping 138 Feet below surface
Pumping level 273 feet below surface after 24 hours pumping
Drawdown 135 Feet Specific Capacity ___ Gals. per min. per ft. of drawdown
How Pumped Turbine How measured Orifice
Observed effect on nearby wells Drew Well #1 Down 6 Ft.
9. PERMANENT PUMPING EQUIPMENT:
Type Submersible Mfrs. Name Jacuzzi
Capacity 125 G.P.M. How Driven Electric Motor H.P. 20 R.P.M. 3600
Depth of Pump in well 300 Feet Depth of Footpiece in well 300 Feet
Depth of Air Line in well 300 Feet Type of Meter on Pump ___ Size ___ Inches
10. USED FOR Cooling AMOUNT { Average ___ Gallons Daily / Maximum ___ Gallons Daily
11. QUALITY OF WATER ___ Sample: Yes ___ No. ___
Taste ___ Odor ___ Color ___ Temp. ___ °F
12. LOG ___ Are samples available? No
(Give details on back of sheet or on separate sheet. If electric log was made, please furnish copy)
13. SOURCE OF DATA Drillings
14. DATA OBTAINED BY Burrows Well Drilling Co., Inc. Date 9-8-71

(NOTE: Use other side of this sheet for additional information such as log of materials penetrated, analysis of the water, sketch map, sketch of special casing arrangements etc.)

ATTACHMENT C1

(6) 25-13-664 E

FORM 87

DEPARTMENT OF CONSERVATION
AND ECONOMIC DEVELOPMENT
DIVISION OF WATER POLICY & SUPPLY

Permit No. _____
Application No. 25-14520
County _____

WELL RECORD

1. OWNER Town of Morristown ADDRESS Morristown, N. J.
   Owner's Well No. Well #5-Lidgerwood SURFACE ELEVATION _____ Feet (Above mean sea level)
2. LOCATION Lidgerwood-Township of Morristown
3. DATE COMPLETED 11-10-67 DRILLER Burrows Well Drilling Co., Inc.
4. DIAMETER: top 12 Inches Botton 12 Inches TOTAL DEPTH 265 Feet
5. CASING: Type Steel Drive Diameter 12 Inches Length 67'10" Feet
6. SCREEN: Type -- Size of Opening -- Diameter -- Inches Length -- Feet
   Range { Top -- Feet Geologic Formation --
   Bottom -- Feet
   Tail piece. Diameter - Inches Length _____ Feet
7. WELL FLOWS NATURALLY No Gallons per Minute at _____ Feet above surface
   Water rises to _____ Feet above surface
8. RECORD OF TEST: Date 11-7-67 to 11-10-67 Yield 800 Gallons per minute
   Static water level before pumping 40 Feet below surface
   Pumping level 150 feet below surface after _____ hours pumping
   Drawdown 33½ Feet Specific Capacity _____ Gals. per min. per ft. of drawdown
   How Pumped Diesal Driven Turbine How measured Orfice
   Observed effect on nearby wells None
9. PERMANENT PUMPING EQUIPMENT:
   Type --- Mfrs. Name ---
   Capacity _____ G.P.M. How Driven _____ H.P. _____ R.P.M. _____
   Depth of Pump in well _____ Feet _____ Depth of Footpiece in well _____ Feet
   Depth of Air Line in well _____ Feet _____ Depth of Meter on Pump _____
10. USED FOR Municipality AMOUNT Average - Gallons Daily
    Maximum - Gallons Daily
11. QUALITY OF WATER _____ Sample: Yes ____ No. ____
    Taste _____ Odor _____ Color Clear Temp. 53° °F
12. LOG over Are samples available yes
    (Give details on back of sheet or on seperate sheet. If electric log was made, please furnish copy)
13. SOURCE OF DATA Drillings
14. DATA OBTAINED BY Burrows Well Drilling Co., Inc. Date Throughout job.

(NOTE: Use other side of this sheet for additional information such as log of materials penetrated, analysis of the water, sketch map, sketch of special casing arrangements etc.)

ATTACHMENT C8

25.13.6.63

Form 87-5M

DEPARTMENT OF CONSERVATION
AND ECONOMIC DEVELOPMENT
Division of Water Policy & Supply

Permit No. 25-3936
Application No. _____
County _____

WELL RECORD

1. OWNER Beneficial Properties Inc ADDRESS 15 Washington St. Morristown
Owner's Well No. 1 SURFACE ELEVATION 360 Feet (Above mean sea level)

2. LOCATION south street, morristown, N.J.

3. DATE COMPLETED _____ DRILLER Burrows Well Drilling Co.

4. DIAMETER: Top 8 Inches Bottom 8 Inches TOTAL DEPTH 500 Feet

5. CASING: Type steel Diameter 8 Inches Length 206 Feet

6. SCREEN: Type X Size of Opening _____ Diameter _____ Inches Length _____ Feet
Range in Depth { Top _____ Feet Bottom _____ Feet Geologic Formation Trias. Shale
Tail piece. Diameter _____ Inches Length _____ Feet

7. WELL FLOWS NATURALLY X Gallons per Minute at _____ Feet above surface
Water rises to _____ Feet above surface 150 for #3 last

8. RECORD OF TEST: Date No. 1, 305 dup Yield 30 Gallons per minute
see other side
Static water level before pumping 90 Feet below surface
Pumping level 150 feet below surface after 8 hours pumping
Drawdown 70 Feet Specific Capacity _____ Gals. per min. per ft. of drawdown
How Pumped turbin How measured watch + Drum
Observed effect on nearby wells none

9. PERMANENT PUMPING EQUIPMENT: turbin
Type Not installed as yet Capacity 150 Gallons per minute
How Driven Proposed - electric Horse Power 25 R.P.M. 1800
Depth of pump in well 231 Feet Depth of Foot piece in well 231 Feet
Depth of Air Line in well 200 Feet Type of Meter on Pump altitude guage

10. USED FOR air conditioning AMOUNT { Average under 90,000 Gallons Daily
Maximum 95,000 Gallons Daily

11. QUALITY OF WATER _____ Sample: Yes _____ No. X
Taste None Odor None Color None Temperature 54 °F

12. LOG over (Give details on back of sheet or on separate sheet) Are samples available? yes

13. SOURCE OF DATA drillings

14. DATA OBTAINED BY John E Burrows DATE June 55

(Note: Use other side of this sheet for additional information such as log of materials penetrated, analysis of the water, sketch map, sketch of special casing arrangements, etc.)

ATTACHMENT C9

(8)

25-14-442

DEPARTMENT OF CONSERVATION
AND ECONOMIC DEVELOPMENT
DIVISION OF WATER POLICY & SUPPLY

Permit No. 65-13,439
Application No. _____
County _____

WELL RECORD

1. OWNER Morristown Water Co. ADDRESS Morristown, New Jersey
   Owner's Well No. _____ SURFACE ELEVATION _____ Feet (Above mean sea level)
2. LOCATION Johnson Drive & Turtle Road, Morristown, Morris County
3. DATE COMPLETED Dec. 20, 1965 DRILLER Wm. Stothoff Co., Inc.
4. DIAMETER: top 12 Inches Bottom 12 Inches TOTAL DEPTH 496 Feet
5. CASING: Type Std Steel, PE, Welded Diameter 12 Inches Length 124 Feet
6. SCREEN: Type None Size of Opening ___ Diameter _____ Inches Length _____ Feet
   Range in Depth { Top _____ Feet / Bottom _____ Feet } Geologic Formation _____
   Tail piece: Diameter _____ Inches Length _____ Feet
7. WELL FLOWS NATURALLY _____ Gallons per Minute at _____ Feet above surface
   Water rises to _____ Feet above surface
8. RECORD OF TEST: Date Dec. 16-18, 1965 Yield 420 Gallons per minute
   Static water level before pumping 44 Feet below surface
   Pumping level 191 feet below surface after 48 hours pumping
   Drawdown 147 Feet Specific Capacity _____ Gals. per min. per ft. of drawdown
   How Pumped Turbine Pump - Gasoline Engine How measured Orifice
   Observed effect on nearby wells None observed
9. PERMANENT PUMPING EQUIPMENT:
   Type _____ Mfrs. Name _____
   Capacity _____ G.P.M. How Driven _____ H.P. _____ R.P.M. _____
   Depth of Pump in well _____ Feet Depth of Footpiece in well _____ Feet
   Depth of Air Line in well _____ Feet Type of Meter on Pump _____ Size ___ Inches
10. USED FOR Municipal Water Supply AMOUNT { Average _____ Gallons Daily / Maximum _____ Gallons Daily }
11. QUALITY OF WATER _____ Sample: Yes ___ No. ___
    Taste _____ Odor _____ Color _____ Temp. _____ °F
12. LOG See other Side Are samples available? No
    (Give details on back of sheet or on separate sheet. If electric log was made, please furnish copy)
13. SOURCE OF DATA Wm. Stothoff Co., Inc.
14. DATA OBTAINED BY Wm. Stothoff Co., Inc. Date 2-23-66

ATTACHMENT C10

(NOTE: Use other side of this sheet for additional information such as log of materials penetrated, analysis of the water, sketch map, sketch of special casing arrangements etc.)

9 25.14.177 ✓

FORM 87

RECEIVED
OCT 26 '61
DEPT. CONS. & ECON. DEV.
DIV. OF WATER POLICY & SUPPLY

DEPARTMENT OF CONSERVATION
AND ECONOMIC DEVELOPMENT
DIVISION OF WATER POLICY & SUPPLY

Permit No. 25-8717
Application No. _____
County _____

WELL RECORD

1. OWNER Tech-Art Plastics Co. ADDRESS 111 Ridgedale Rd, Morris Twp.
Owner's Well No. _____ SURFACE ELEVATION 320 Feet (Above mean sea level)
2. LOCATION Morris Twp.
3. DATE COMPLETED Sept. 5, 1961 DRILLER Dimunzi Well Drilling Co.
4. DIAMETER: top 8 Inches Bottom 8 Inches TOTAL DEPTH 163 Feet
5. CASING: Type Steel Diameter 8 inches Length 143 Feet
6. SCREEN: Type Wire Wound Size of Opening 50 Diameter 6 5/8 Inches Length 20 Feet
Range in Depth { Top 143 Feet / Bottom 163 Feet } Geologic Formation Gravel
Tail piece: Diameter _____ Inches Length _____ Feet
7. WELL FLOWS NATURALLY _____ Gallons per Minute at _____ Feet above surface
Water rises to _____ Feet above surface
8. RECORD OF TEST: Date Sept. 5, 1961 Yield 70 Gallons per minute
Static water level before pumping 30 Feet below surface
Pumping level 150 feet below surface after 48 hours pumping
Drawdown 120 Feet Specific Capacity .58 Gals. per min. per ft. of drawdown
How Pumped Submersible test pump How measured wier
Observed effect on nearby wells none
9. PERMANENT PUMPING EQUIPMENT: Not installed by driller
Type _____ Mfrs. Name _____
Capacity _____ G.P.M. How Driven _____ H.P. _____ R.P.M. _____
Depth of Pump in well _____ Feet Depth of Footpiece in well _____ Feet
Depth of Air Line in well _____ Feet Type of Meter on Pump _____ Size _____ Inches
10. USED FOR Factory AMOUNT { Average 30,000 Gallons Daily / Maximum 10,000 Gallons Daily }
11. QUALITY OF WATER Good Sample: Yes ____ No. x
Taste None Odor None Color None Temp. 50 °F
12. LOG (other side) Are samples available? no
(Give details on back of sheet or on separate sheet. If electric log was made, please furnish copy)
13. SOURCE OF DATA self
14. DATA OBTAINED BY self Date Sept. 5, 1961

(NOTE: Use other side of this sheet for additional information such as log of materials penetrated, analysis of the water, sketch map, sketch of special casing arrangements etc.)

ATTACHMENT C11

10 25-14-177 [21]

FORM B7

DEPARTMENT OF CONSERVATION
AND ECONOMIC DEVELOPMENT
DIVISION OF WATER POLICY & SUPPLY

Permit No. 25-15756
Application No. _____
County Morris

WELL RECORD

1. OWNER B. W. B. Corp. ADDRESS _____
Owner's Well No. _____ SURFACE ELEVATION _____ Feet (Above mean sea level)
2. LOCATION 160 Ridgedale Ave Morris Township.
3. DATE COMPLETED April 10-71 DRILLER Algeier Bros
4. DIAMETER: top 6 Inches Bottom 6 Inches TOTAL DEPTH 350. Feet
5. CASING: Type BK Threaded Diameter 6 Inches Length 175 Feet
6. SCREEN: Type _____ Size of Opening ___ Diameter _____ Inches Length _____ Feet
Range in Depth { Top _____ Feet / Bottom _____ Feet Geologic Formation START NQTM Tr b
Tail piece: Diameter _____ Inches Length _____ Feet
7. WELL FLOWS NATURALLY _____ Gallons per Minute at _____ Feet above surface
Water rises to _____ Feet above surface
8. RECORD OF TEST: Date April 10-71 Yield 45 Gallons per minute
Static water level before pumping 50 Feet below surface
Pumping level 275 feet below surface after 4 hours pumping
Drawdown _____ Feet Specific Capacity _____ Gals. per min. per ft. of drawdown
How Pumped Submersible How measured _____
Observed effect on nearby wells _____
9. PERMANENT PUMPING EQUIPMENT:
Type Submersible Mfrs. Name Fairbanks & Morse
Capacity 50 G.P.M. How Driven elect. H.P. 7½ R.P.M. 3450
Depth of Pump in well 280 Feet Depth of Footpiece in well _____ Feet
Depth of Air Line in well ___ Feet Type of Meter on Pump _____ Size ___ Inches
10. USED FOR Car Wash. AMOUNT { Average _____ Gallons Daily / Maximum _____ Gallons Daily
11. QUALITY OF WATER good Sample: Yes ___ No. ___
Taste None Odor None Color clear Temp. _____ °F
12. LOG _____ Are samples available? _____
(Give details on back of sheet or on separate sheet. If electric log was made, please furnish copy)
13. SOURCE OF DATA _____
14. DATA OBTAINED BY Conrad Algeier Date March 16-72

(NOTE: Use other side of this sheet for additional information such as log of materials penetrated analysis of the water, sketch map, sketch of special casing arrangements etc.) ATTACHMENT C12

(11)

25.14.1.7.8

Form 87-5M

DEPARTMENT OF CONSERVATION AND ECONOMIC DEVELOPMENT
Division of Water Policy & Supply
WELL RECORD

Permit No. 25-3701
Application No. _____
County _____

1. OWNER T. LANDI + SON ADDRESS MORRISTOWN NJ
Owner's Well No. 2 SURFACE ELEVATION ± 310' Feet (Above mean sea level)
2. LOCATION RIDGEDALE AVE MORRISTOWN NJ
3. DATE COMPLETED 8-25-54 DRILLER DALE H. FEAKINS
4. DIAMETER: Top 8 Inches Bottom 8 Inches TOTAL DEPTH 48 Feet
5. CASING: Type STEEL Diameter 8 Inches Length 39 Feet
6. SCREEN: Type JOHNSON Size of Opening .50 Diameter 8" Inches Length 10 Feet
Range in Depth { Top 38 Feet Bottom 48 Feet Geologic Formation SAND + GRAVEL
Tail piece. Diameter 0 Inches Length 0 Feet
7. WELL FLOWS NATURALLY _____ Gallons per Minute at _____ Feet above surface
Water rises to _____ Feet above surface
8. RECORD OF TEST: Date 8-1-55 Yield 90 Gallons per minute
Static water level before pumping 28 Feet below surface
Pumping level 48 feet below surface after 3 MIN hours pumping
Drawdown 20 Feet Specific Capacity 4½ Gals. per min. per ft. of drawdown
How Pumped DEEP WELL TURBINE How measured ORIFICE
Observed effect on nearby wells NONE
9. PERMANENT PUMPING EQUIPMENT:
Type DEEP WELL TURBINE Capacity 100 Gallons per minute
How Driven ELECTRIC Horse Power 7½ R.P.M. 1750
Depth of pump in well 40 Feet Depth of Foot piece in well 0 Feet
Depth of Air Line in well _____ Feet Type of Meter on Pump 0
10. USED FOR WASHING GRAVEL AMOUNT { Average 42-45000 Gallons Daily Maximum 50,000 Gallons Daily
11. QUALITY OF WATER GOOD Sample: Yes _____ No. _____
Taste 0 Odor 0 Color - Temperature _____ °F
12. LOG SAND + GRAVEL TO 50' - 50-90' HARDPAN Are samples available? _____
(Give details on back of sheet or on separate sheet)
13. SOURCE OF DATA DALE H. FEAKINS
14. DATA OBTAINED BY A Feakins DATE 1/27/55

(Note: Use other side of this sheet for additional information such as log of materials penetrated, analysis of the water, sketch map, sketch of special casing arrangements, etc.)

ATTACHMENT C13

ATTACHMENT D

ATTACHMENT P1

G-1

STATE OF NEW JERSEY
DEPARTMENT OF CONSERVATION
AND ECONOMIC DEVELOPMENT

DIVISION OF WATER POLICY
AND SUPPLY

SPECIAL REPORT 25

AVAILABILITY OF GROUND WATER IN MORRIS COUNTY, NEW JERSEY

Prepared in cooperation with
United States Department of the Interior
Geological Survey

1965

SK

ground-water resources of the county. This report represents the first detailed discussion of the ground-water resources of Morris County.

ACKNOWLEDGMENTS

The authors wish to thank the numerous well drillers, office of the New Jersey Bureau of Geology and Topography, and other State, municipal, and industrial officials, and private individuals who supplied data on which this report is based. The cooperation of many of these who permitted use of their wells for water-level observations, collection of water samples, logging purposes, and pumping tests is gratefully acknowledged.

GEOGRAPHY

TOPOGRAPHY

Morris County is part of the Appalachian Highland, one of eight major physiographic divisions of the United States. The Appalachian Highland consists of several physiographic provinces; two of these, the New England and the Piedmont, are present in the county.

The New England province, locally known as the New Jersey Highlands, occupies that part of the county lying northwest of a line passing near Morristown, Boonton and Riverdale (fig. 2). It consists of several broad, rounded or flat-topped ridges separated from each other by deep and generally narrow valleys. Altitudes of more than 1,000 feet are quite common on the ridges; a few exceed 1,300 feet. The larger topographic features of the Highlands show a marked northeast-southwest trend; however, some of the prominent valleys, such as the Rockaway and the Pequannock, are transverse to the regional trend.

The Piedmont province, which occupies the southeastern part of the county, is chiefly a lowland of gently rounded hills with a few ridges and isolated hills rising conspicuously above the plain. Most of this area lies at altitudes of about 200 to 400 feet. Several large swamps, of which the Great Swamp is the most extensive (fig. 1), occupy a large part of the lower lying areas. The topography of much of the Piedmont province in Morris County has been considerably modified by the Wisconsin Glaciation, the last of the great Pleistocene ice advances in North America.

Morris County lies within three major drainage basins—the Passaic, the Raritan, and the Delaware. The eastern two-thirds of the county is drained by the Passaic River and its major tributaries, the Pequannock, Pompton, Rockaway, and Whippany Rivers (fig. 1). Most of the southwestern part of the county lies in the Raritan River drainage basin which is drained by the North and South Branches of the Raritan River and the Lamington River. The Musconetcong River, which flows into the Delaware River, drains a narrow area along the western border of the county.

CLIMATE

The climate of Morris County, and of the State as a whole, is largely continental, mainly owing to the predominance of winds from the interior of North America. Winters are controlled by polar continental air masses, and summers by tropical air masses which, although maritime in origin, display long continental trajectories over very warm land masses before

Table 2.—Population of municipalities in Morris County, N. J. since 1940—Continued

(Data from U. S. Bureau of Census)

Municipality	*1960*	*1950*	*1940*
Mountain Lakes	4,037	2,806	2,205
Mt. Arlington	1,246	639	456
Mt. Olive Township	3,807	2,597	1,526
Netcong	2,765	2,284	2,157
Parsippany-Troy Hills Township	25,557	15,290	10,976
Passaic Township	5,537	3,429	2,664
Pequannock Township	10,553	5,254	2,856
Randolph Township	7,295	4,293	2,160
Riverdale	2,596	1,352	1,110
Rockaway	5,413	3,812	3,514
Rockaway Township	10,356	4,418	2,423
Roxbury Township	9,983	5,707	4,455
Victory Gardens	1,085	Part of Randolph Twp.	
Washington Township	3,330	2,147	1,870
Wharton	5,006	3,853	3,854
Total for county	261,620	164,371	125,732

The economy of Morris County is primarily industrial. The principal manufactured items include chemicals, electrical goods and machinery, other machinery, and rubber products (New Jersey Department of Conservation and Economic Development, 1960). Farmland comprises about 16 percent of the total land area of which the principal products are dairy, poultry, corn, oats, and some vegetables (U. S. Dept. of Commerce, 1959).

ATTACHMENT 3 D3

GEOLOGY

INTRODUCTION

Various rock types representing several geologic periods crop out in Morris County. The oldest of these are the Precambrian crystalline rocks exposed in the northwestern two-thirds of the county, in the New England province. Associated with the Precambrian rocks are long narrow belts of Paleozoic sedimentary rocks—shales, sandstones, and limestones.

The southeastern third, or the Piedmont province, of the county is underlain by Triassic sandstones and shales with interbedded basaltic lava flows. Unconsolidated deposits of glacial and fluvial origin overlie much of the Triassic outcrop area, and, to a lesser extent, parts of the New England province. These deposits consist of stratified and unstratified sand, clay, and gravel deposited by various glacial phenomena and streams.

Brief descriptions of the formations exposed in Morris County are presented in table 3. The generalized geologic map (fig. 2) shows the areal extent of the various rock units and their structural relationships.

DISTRIBUTION AND LITHOLOGY OF THE MAJOR ROCK UNITS

Precambrian Rocks

Crystalline rocks of Precambrian age underlie almost all of the northwestern two-thirds of the county (fig. 2). They are mainly granitoid gneisses and pegmatites but include also schists, crystalline limestone or marble, magnetite, and a few small quartz veins. For purposes of mapping, these rocks have been divided into four formations—the Franklin Limestone, the Pochuck Gneiss, the Losee Gneiss, and the Byram Gneiss. These formations are considered as a unit in this report because their water-bearing properties are virtually similar.

The gneisses, of which the Byram and Losee are most abundant, are distinguished by their color and mineral composition. The dark-colored gneisses that owe their color to an abundance of hornblende, pyroxene, or biotite have been grouped together under the name Pochuck Gneiss. The Byram Gneiss is generally brownish-gray and contains potash feldspar as an essential mineral component. The Losee Gneiss includes light-colored granitoid rocks, many of them nearly white, which contain soda-lime feldspar as an essential and characteristic mineral component.

Table 3.—Stratigraphic table describing the rocks exposed in Morris County

Era	*Period*	*Formation*	*Thickness (feet)*	*Lithology*	*Character of topography and soil*
Cenozoic	Quaternary	Alluvium	0-25	Sands, clays, and gravels deposited along stream channels	Valley bottoms; sandy clay-loam soil
		Glacial drift	0-400	Sands, clays, and gravels of glacial origin	Low linear hills; valley bottoms
		Unconformity			
Mesozoic	Triassic	Watchung Basalt	200-450	Three basaltic lava flows interbedded with the Newark Group; only one crops out in Morris County	Low linear hills
		Brunswick Formation	6,000-8,000	Interbedded, soft, red sandstones, shales, conglomerates, and arkoses	Wide rolling lowland; sandy clay-loam soil
		Unconformity			
Paleozoic	Devonian	Cornwall Shale	1,000±	Dark thick-bedded shale, somewhat sandy toward the top	Low rolling hills; sandy clay soils
		Kanouse Sandstone	215	Fine-grained white quartz conglomerate, with greenish sandstone above.	Valley bottoms and low ridges; sandy soil
	Silurian	Decker Limestone	50	Dark gray impure siliceous and shaly limestone	Valley bottoms
		Longwood Shale	200±	Soft red shale	Valley bottoms; clay soil
		Green Pond Conglomerate	1,500±	Coarse quartz conglomerate, interbedded with and grading upward into quartzite and sandstone	High, steep-sided, even-crested ridges; sandy soil
		Unconformity			

Table 3.—Stratigraphic table describing the rocks exposed in Morris County—Continued

Era	*Period*	*Formation*	*Thickness (feet)*	*Lithology*	*Character of topography and soil*
Paleozoic	Ordovician	Martinsburg Shale	3,000±	Fine black shale, slate, and sandstone; sandstones dark to bluish gray, in part calcareous, and most numerous in upper portion of formation	High rolling hills; stony clay and loamy soils, generally thin
		Jacksonburg Limestone	135-150	Dark fossiliferous limestone and shale; limestone conglomerate at the base	High slopes; clayey soils
		Unconformity			
	Cambrian	Kittatinny Limestone	2,500-3,000±	Massive-bedded bluish-gray magnesian limestone containing layers of black chert and oolite; shales and interbedded thin limestones at top and base	Valley floors and rolling hills; locally rough "warty" topography; clayey soils, in places thin
		Hardyston Quartzite	5-200	Arkosic quartzite, in places conglomeritic	Hill slopes
		Unconformity			
Precambrian		Byram, Losee, and Pochuck Gneisses and Franklin Limestone		Gneisses of both sedimentary and igneous origin; crystalline limestone	High ridges with plateau-like summits and steep slopes; thick stony soils in areas not covered by glacial drift

The Franklin Limestone is generally a white coarsely crystalline marble. Its principal mineral component is calcite but dolomite predominates in some areas.

The gneisses generally occur as tabular masses that strike northeast and dip steeply to the southeast. The Franklin Limestone occurs as small isolated masses within the gneissic complex.

Palezoic Rocks

Rocks of Paleozoic age crop out in three parallel belts (fig. 2) within Morris County. The belts trend northeast-southwest, similar to the major structural features of the gneissic complex with which they are associated. The Paleozoic rocks have been complexly folded and faulted, and these belts are remnants of the once continuous folds.

The first belt lies along the westernmost edge of the county. The width of this belt within the county is less than a mile.

A second belt traverses the county from Newfoundland to Middle Valley, attaining its maximum width at its northeastern end where it is about 4 miles wide. At its southwestern end, it is about 1 mile wide.

The third belt of Paleozoic rocks crops out to the west of Mendham. Within the county, this belt has a length of 5 miles and a maximum width of about 1 mile.

The Paleozoic rocks cropping out in Morris County consist of conglomerate, sandstone, quartzite, shale, and limestone. These rocks have been divided into several formations which are from oldest to youngest, respectively: the Hardystone Quartzite of Early Cambrian age, the Kittatinny Limestone of Late Cambrian and Early Ordovician age, the Jacksonburg Limestone and Martinsburg Shale of Ordovician age, the Green Pond Conglomerate, Longwood Shale, and Decker Limestone of Silurian age, and the Kanouse Sandstone and Cornwell Shale of Middle Devonian age. The lithology of each of these formations is described briefly in table 3.

Except for the Kittatinny Limestone, the Paleozoic formations are not important aquifers within the county because of their limited areal extent and their poor water-bearing properties. Therefore, the Paleozoic formations are not differentiated on the geologic map (fig. 2) except where the Kittatinny Limestone crops out over an extensive area.

Triassic Rocks

Rocks of Triassic age underlie the entire southeastern third of the county, (fig. 2). The Triassic System, known as the Newark Group, consists of alternating soft sandstones and shales with three sandwiched sheets of basalt.

The sedimentary rocks of the Newark Group are generally reddish-brown, although black, gray, and green beds are present locally. For the most part, the rocks consist of thin-bedded sandstones and shales. Near the northwestern margin of the Triassic rocks, conglomerate beds are interlayered with the beds of sandstone and shale. The conglomerates contain pebbles and boulders of many different rock types—granite gneiss, limestone, basalt, sandstone, quartzite, and slate. Because of their varied composition, the conglomerate beds do not exhibit a uniform color.

Sandwiched with the beds of sandstone and shale are three extensive sheets of basalt, only one of which—the uppermost sheet—is exposed in Morris County. The basalt sheets were formed by lava flows which were extruded at three different times during the accumulation of the sedimentary rocks of the Newark Group. The basalt is much more resistant to erosion than are the shale and sandstone, and therefore forms prominent ridges. The first sheet forms First Watchung Mountain, the second sheet forms Second Watchung Mountain, and the third sheet, the only one exposed in Morris County, forms a discontinuous ridge whose parts in Morris County are called Long Hill and Hook Mountain (fig. 2). This basalt sheet is about 450 feet thick at Hook Mountain and about 250 feet thick at Long Hill (Darton & others, 1908, p. 10).

The Triassic rocks generally exhibit a monoclinal structure; the strata dip gently to the west-northwest at about 8° to 10°. Local flexures occur in some areas, particularly in the area surrounding Morristown. Here the rocks have been warped into a gentle anticline whose axis trends northeast-southwest. The basalt sheets have virtually the same attitude as the sedimentary rocks.

Quaternary Rocks

The Quaternary rocks comprise the unconsolidated surficial deposits which mantle the bedrock surface over a large part of Morris County. These deposits are as a rule of local distribution and consist of clay, silt, sand, gravel, and boulders and, in many places, are without systematic arrangement. They are glacial, lacustrine, or fluviatile in origin.

The deposits of Pleistocene age represent two or possibly three of the stages into which the Pleistocene of North America has been subdivided. They are chiefly of glacial origin but include also fluviatile deposits that are believed to be contemporaneous with one of the glacial invasions.

South of the terminal moraine of the last (Wisconsin) glaciation lie many patches of older glacially derived material, the age of which cannot be determined with certainty but which belong to one or more of the earlier glaciations (fig. 3).

The drift is generally thin, but in some places it has a thickness of 30 feet. The oxidation and deep coloration of the matrix, deep disintegration of most of the stony material, the absence of calcareous and other soluble material, and the fragmentary and much eroded character of the deposits are indicative of a deposit much older than the sediments of the Wisconsin Glaciation.

Glacial drift of Wisconsin age covers most of the northern half of Morris County. The material is till, sand, gravel, and lacustrine silt and clay. The deposits fall into three general classes—terminal moraine, ground moraine, and stratified drift, which is of several sorts including lacustrine and fluviatile deposits. Figure 3 is an outline map of Morris County showing the extent of the terminal moraine and stratified drift deposits. Because the emphasis in this report is on the water-bearing properties of the Quaternary deposits, the deposits of ground moraine have been excluded from the map since they function mainly as a confining bed. The terminal moraine is emphasized to show the southernmost extent of the Wisconsin Glaciation.

The terminal moraine extends irregularly from east to west across Morris County from Chatham to Hackettstown (fig. 3). Chatham, Madison, Morris Plains, Denville, Rockaway, Wharton, and Netcong lie upon it or close to its borders.

Stratified drift of the Wisconsin Glaciation is widely distributed throughout Morris County. South of the terminal moraine, near Dover and Madison, considerable areas of stratified drift form outwash plains or valley trains. North of the moraine such drift, mostly in the form of low terraces, forms narrow belts in the valleys. At several places, however, it forms distinct kames. A few distinct ridges have the forms of eskers.

The lithologic character of the stratified drift differs from place to place with differences in the character of the underlying rock. Much of it is poorly sorted, although the stones are generally fairly well rounded and worn. Its thickness is not readily estimated, for wells rarely reach its base. Its depth is perhaps on the average two or three times that of the ground moraine (average ground moraine thickness in this area 5 to 12 feet).

Subsurface deposits of stratified drift have been encountered in numerous borings and wells along the eastern margin of Morris County. They are found as channel-fill deposits in pre-Pleistocene stream valleys. The general coarse texture of the material and their moderate areal distribution make them a substantial ground-water reservoir. These water-bearing deposits are used extensively in the outlined triangular area near and northeast of Chatham and Morris Plains (fig. 3). These channel deposits as yet are not well defined. Additional work is needed to define better the character and extent of these deposits. An intensive study would probably indicate other areas within Morris County that are underlain by highly premeable channel-fill deposits.

lower elevations. Ground water is discharged directly to the streams wherever they intersect the water table and supports streamflow during periods of no precipitation. See figure 4.

In the swampland areas that are underlain by clay and silt, such as those along the Passaic River, discharge of ground water to the streams is restricted by low permeability of the materials and the slight hydraulic gradients (Vecchioli and others, 1962). During the vegetative growing season, most of the ground-water discharge occurs in these areas as evapotranspiration and very little is discharged to the streams. Consequently, dry-weather streamflow is not augmented significantly by these areas; rather, it may even be reduced by the high rate of evapotranspiration.

In addition to the natural discharge of ground water by seepage into streams and by evapotranspiration, ground water is discharged artifically by the pumping of wells. Generally, the pumping has not been of sufficient magnitude or concentration to affect significantly the natural pattern of ground-water flow. However, in a few places of continuous heavy withdrawals, the artesian head has been lowered regionally as will be discussed later. In some areas, wells near streams that are in hydraulic continuity with the aquifer reverse the natural gradients when they are being pumped and thus induce recharge from the streams; this also will be discussed further.

WATER-BEARING PROPERTIES OF MAJOR ROCK UNITS

Precambrian Rocks

Precambrian crystalline rocks underlie almost all of the northwestern two-thirds of Morris County and are the only source of ground water in most of this area (fig. 2).

In the Precambrian rocks ground water occurs under water-table conditions. In some of the lower lying areas, the rocks are overlain by clay beds which confine the water, resulting in local artesian conditions. Virtually all the storage and movement of ground water in these rocks occurs in fractures that have been enlarged by weathering. The yield of a well tapping the Precambrian rocks depends largely on the size and number of intersecting fractures encountered by the well, a factor which varies considerably from place to place and also with depth. The capacity of the fractures to store and transmit water decreases with depth and experience has shown it is not worthwhile generally to drill deeper than about 300 feet when seeking to develop a water supply. If, within the first 300 feet of drilling, a well does not yield the required

supply, a better chance for success may be obtained by drilling a second well rather than by deepening the first well.

The yields of wells tapping Precambrian rocks in Morris County range considerably. Of 79 large-diameter public supply, industrial, and commercial wells, the maximum yield is 400 gpm, the minimum 4 gpm. The distribution of the yields is as follows:

Yield (gpm)	*Number of Wells*
0- 25	14
26- 50	20
51- 75	16
76-100	8
101-125	4
126-150	3
151-175	2
176-200	4
201-225	3
226-250	1
251-275	2
276-300	1
375-400	1

Figure 5 is a plot of the yield of these wells and the number of reports in groupings of 25 gallons per minute (fig. 5). As can be seen from the figure, there are at least two groups or populations of well yields. The bulk of these data are grouped in the 0 to 100 gpm range, and average 48 gpm. The remainder can be grouped from 100 to 400 gpm, and average 195 gpm. Precambrian wells in the 0 to 100 gpm range are probably deriving water from the regional fracture network whereas the majority of the higher yielding wells (over 100 gpm) either intercept or are located near major fault zones. Fault zones are areas along which rocks have ruptured and where there has been substantial vertical or horizontal movement. Such zones form a more extensive ground-water reservoir than is developed in regional fracture network.

The depths of the 79 large-diameter wells range from 50 to 822 feet, and average 223 feet. There is no apparent relationship between depth and yield of the wells tapping Precambrian rocks in Morris County.

Specific capacities of 56 wells tapping Precambrian rocks range from 0.06 to 15.10 and average 1.77 gpm per ft.

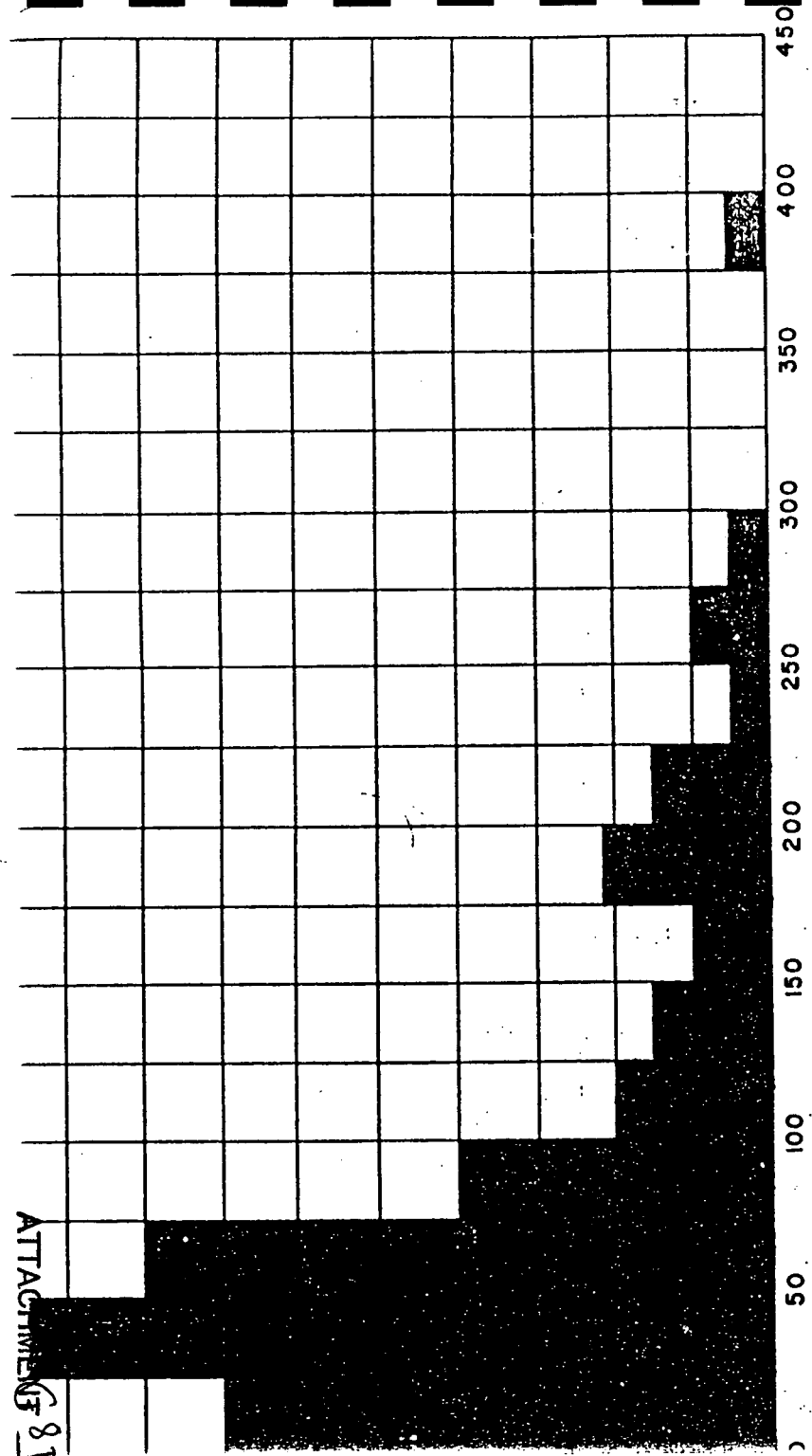


Figure 5.—Number of wells tapping the aquifers in the Precambrian rocks having yields within ranges indicated.

There was no opportunity to conduct pumping tests on wells tapping the Precambrian rocks during this investigation; hence, coefficients of transmissibility and storage were not determined. However, these coefficients can be estimated using specific capacities of wells (Theis, 1954) and other known hydrologic properties of the rocks. Coefficient of storage is estimated to be 0.001 based on prevailing water-table conditions and the low porosity of Precambrian rocks. Employing an average specific capacity of about 1.8 gpm per ft., the coefficient of transmissibility is estimated to be 2,000 to 3,000 gpd per ft. These values of transmissibility and storage are based on average conditions, and they are intended to indicate only an order of magnitude. Undoubtedly, the actual coefficients will depart considerably from the estimated values in some places.

The hydraulic characteristics of Precambrian rocks indicate that extreme care must be taken in developing new supplies near existing ones. Wells should be located to provide the least practical amount of mutual interference. Detailed hydrologic information at each site is necessary to evaluate adequately the possibility of developing moderate to large ground-water supplies from these rocks.

Water from the Precambrian rocks in Morris County generally is of suitable chemical quality for most uses. (See table 8.) It is soft (less than 60 ppm) to moderately hard, (60 to 120 ppm) the pH ranges from slightly acidic to slightly alkaline. Iron occurs in objectionable concentrations in some areas.

Paleozoic Rocks

Paleozoic rocks are minor aquifers in Morris County because of their limited areal extent. (See fig. 2.) Moreover, most Paleozoic rocks have poor water-bearing properties and are capable of sustaining only small domestic supplies. The Kittatinny Limestone is an exception, as will be discussed below. Locally, the sandstones are capable of yielding moderate to large supplies.

Because few wells tap Paleozoic rocks in Morris County, data are sparse regarding the water-bearing properties of these rocks. However, the mode of occurrence of ground water in these rocks varies considerably depending upon the lithology. Consequently, some general statements can be made as to the expected potential yields.

In shale formations, most of the ground water that is available to wells occurs in interconnecting fractures. Generally, openings provided

The average yield of 37 large-diameter public-supply, industrial, and commercial wells tapping these rocks is 142 gpm, ranging between 4 and 650 gpm. The distribution of the yields is as follows:

Yield (gpm)	*Number of Wells*
0- 50	11
51-100	8
101-150	3
151-200	8
201-300	5
>300	2

The depths of the 37 wells range from 90 to 985 feet and average 368 feet. Specific capacities of 34 wells range from 0.03 to 33.33 and average 4.57 gpm per foot with six of the wells greater than 4 gpm per foot.

Most wells drilled into the basalt produce small quantities of water from depths of less than 300 feet. The yield of 5 large-diameter public supply wells ranged from 30 to 53 gpm. Rarely is a well drilled that produces no water or that yields more than 50 gpm. The specific capacities of wells that tap the basalt are generally much less than 1 gpm per foot.

Except for hardness-forming constituents, water from the Triassic rocks generally does not contain objectionable concentrations of any chemical constituents. (See table 8.) However, the hardness of the water ranges from moderately hard (60 to 120 ppm) to very hard (over 180 ppm), and in some places a high sulfate content imparts a noncarbonate hardness to the water. Water from the basalt locally may contain objectionable amounts of iron as well as hardness-forming constituents. The pH of the water from the Triassic rocks is generally slightly alkaline.

Quaternary Rocks

The Quaternary rocks comprise the unconsolidated surficial deposits which mantle the bedrock over a large part of Morris County. These deposits are as a rule of local distribution and consist of clay, silt, sand, gravel, and boulders which fall into three general classes—terminal moraine, ground moraine, and stratified drift. Of the three, only the stratified drift deposits merit detailed consideration for their water-bearing properties. These stratified drift deposits form the mineral framework for the most highly developed ground-water reservoir in the county. Ground-water withdrawals in Morris County obtained from the aquifers in the stratified drift deposits amount to 24 mgd or 77 percent of the

total diversions. The deposits are generally capable of sustaining large yields (over 200 gpm) of a good quality of water to wells.

Unconfined ground water occurs in the stratified drift deposits where they are not mantled by the glacial till. The unconfined drift deposits which are well illustrated in figure 3, are related and closely associated with the present-day alignment of the surface-drainage network. Some of the drift was deposited as a valley train or outwash plain when the direction of river flow was different than it is today, but the association is evident. The unconfined deposits associated with the Rockaway River are the most extensively developed in Morris County. The public supplies of Wharton, Dover, Rockaway, Mountain Lakes, and Boonton are drawn in large part from the drift deposits. Figure 3 indicates the areas from which moderate to large supplies have been developed from the stratified drift deposits. The unconfined aquifer is recharged directly from precipitation on the outcrop area of the stratified drift.

Ground water occurs under confined conditions in the stratified drift deposits where they are overlain by clay or silt beds which are part of the glacial till. These confined drift deposits are concealed and their regional extent is not as apparent as the unconfined drift. These water-bearing deposits are used extensively in the outlined area near and northeast of Chatham and Morris Plains, (fig. 3). They are sinuous in nature and restricted to pre-existing stream or river channels. Additional geologic and geophysical work will determine the character and extent of these deposits and also indicate other areas within Morris County that are probably underlain by highly permeable channel-fill deposits.

The confined drift deposits are recharged in part from the underlying and adjacent bedrock. Water entering fractures in the bedrock is derived from precipitation in the upland outcrop areas. This water moves under artesian pressure in response to the hydraulic gradient through the fracture network to the buried channel deposits. The original static levels in many of the wells tapping these deposits in the lowland areas in the southeastern part of the county were above land surface, producing flowing artesian wells.

In the Florham Park-Chatham area, the confined drift deposits have been extensively developed. Figure 6 is a generalized geologic cross section from the Allied Chemical well in Morris Township to the Commonwealth Water Company well in Millburn Township, Essex County—which shows the continuous nature of the confined channel deposit. The

piezometric surface shown indicates a regional slope to the southeast, indicating the general direction of ground-water movement. The original piezometric head in the Madison-Station Road-well field (well A in fig. 6) in 1898 was 204 feet above sea level or about 6 feet below to 10 feet above land surface, depending on the individual well location. Figure 7 illustrates the regional decline in water level in the Madison area since 1900. Since 1953, continuous water-level recorders have been maintained in increasing numbers throughout this area. The continuous decline in average water level is related to increases in pumpage. Continued increases in pumpage will mean a continued decline in the regional piezometric surface.

In Wharton and Dover, the municipal supplies are obtained from the unconfined or semi-confined drift deposits along the Rockaway River (fig. 3). Under static or nonpumping conditions, the movement of ground water is toward the river. Under pumping conditions, the gradient is reversed and there is movement of water from the Rockaway River toward the pumping wells. The location of a well near and in hydraulic continuity with a river is very advantageous. The induced recharge from the river substantially increases the amount of ground water available in the area. This pattern of pumpage has the advantage of utilizing surface water that otherwise would be lost to the area.

The Quaternary deposits are the most productive aquifers in Morris County based on their permeability, and present and potential yield. As part of the regional investigation of the ground-water resources, 13 detailed aquifer tests were made by the Geological Survey on wells tapping the drift deposits (table 4). Analysis of the test data indicates an average coefficient of transmissibility of the aquifers of about 135,000 gpd per foot, and coefficient of storage of about 3.9×10^{-4}.

The average yield of 127 large-diameter public supply, industrial, and commercial wells tapping the stratified drift deposits is 502 gpm, ranging between 20 and 2,200 gpm. The distribution of the yields is as follows:

Yield (gpm)	*Number of Wells*
0- 49	3
50- 99	11
100-199	12
200-499	48
500-999	33
>1,000	20

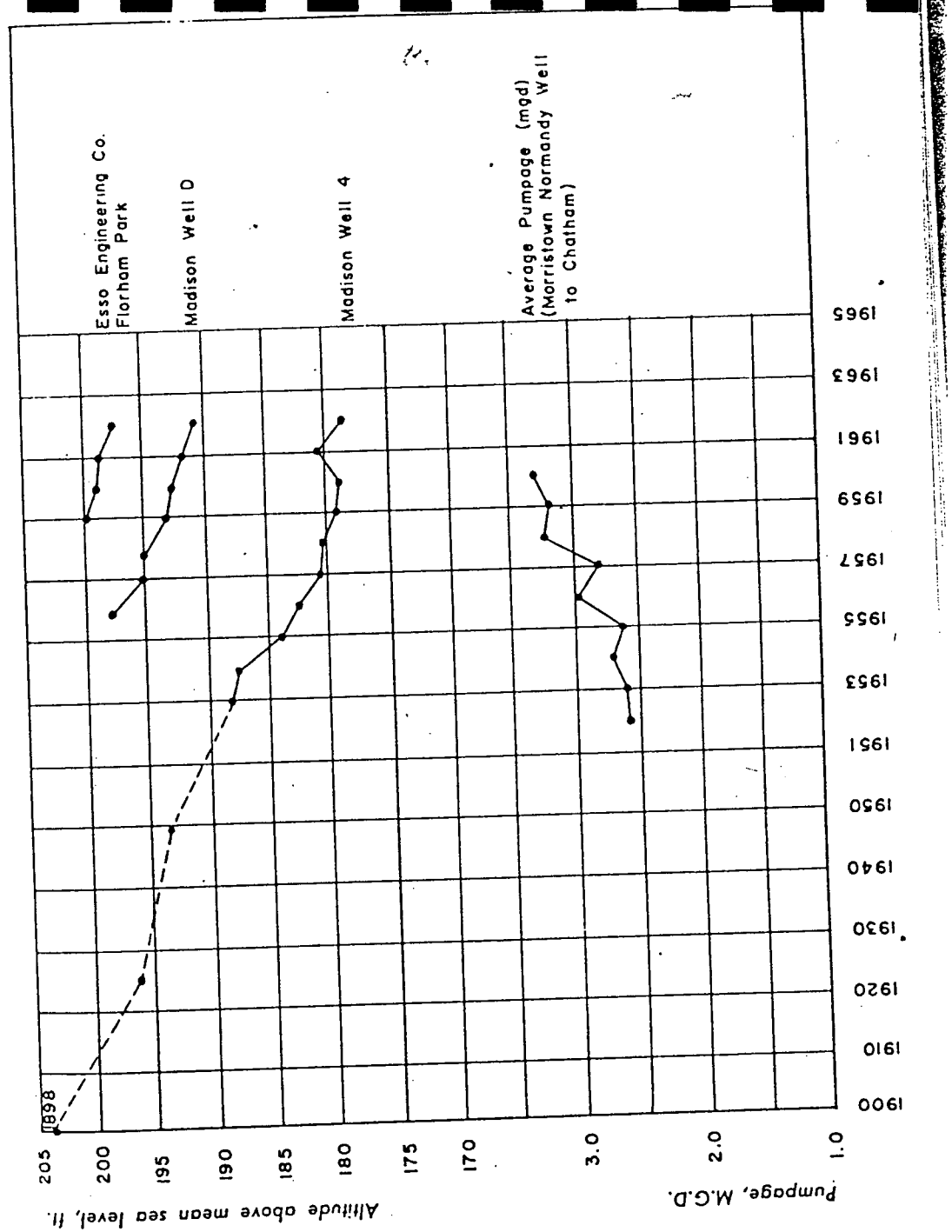


Figure 7.—Graph showing average water levels in the

ATTACHMENT E10 D10

Table 4.—Coefficients of storage and transmissibility for the Quaternary deposits as computed from aquifer tests

Owner and location	Test well number	Number wells used	Pumping rate, gpm	Transmissibility (T) gpd/ft.	Storage (S)
Commonwealth Water Company, Canoe Brook field, Millburn Twp., Essex Co., N. J.	49-50-51	5	1,700	137,000	3.3×10^{-4}
				113,000	5.0×10^{-4}
				122,000	3.5×10^{-4}
	E	2	120	185,000	4.6×10^{-4}
				66,700	5.8×10^{-4}
				66,400	1.1×10^{-3}
	49	1	1,170	134,000	2.3×10^{-4}
Chatham Water Dept., Chatham, N. J.	1	1	1,150	69,400	1.5×10^{-4}
	1	1	1,150	242,000	3.5×10^{-4}
Madison Water Dept., Madison, N. J.	B	4	1,200	259,000	3.3×10^{-4}
				229,200	2.3×10^{-4}
				211,500	2.7×10^{-4}
				229,000	3.8×10^{-4}
	C	1	1,200	162,000	2.0×10^{-4}
Esso Eng. and Design Co., Florham Park, N. J.	1	1	1,150	100,000	2.0×10^{-4}
				92,800	2.0×10^{-4}
Allied Chemical Co., Morris Twp., N. J.	2	1	675	12,800	4.7×10^{-4}
				14,500	5.7×10^{-4}
	2	1	517	9,600	4.0×10^{-4}
Florham Park Water Dept., Florham Park, N. J.	Columbia Ave.	1	1,040	113,000	9.3×10^{-4}
				100,000	9.0×10^{-4}
Greystone Park State Hospital, Morris Plains, N. J.	2	2	400	166,000	1.5×10^{-1}
				156,600	1.8×10^{-1}
Wharton Water Dept., Wharton, N. J.	1	1	410	187,500	5.2×10^{-4}
				191,700	5.0×10^{-4}

The average specific capacity of 110 large-diameter wells is 30.86 gpm per foot; these range between 0.24 and 500 gpm per foot.

Except for hardness-forming constituents, water from the stratified drift deposits generally does not contain objectionable concentrations of any chemical constitutents. (See table 8.) However, the hardness of the water ranges from soft to very hard. The distribution of total hardness is as follows:

Total hardness (ppm)	*Number of wells*
< 60 (soft)	4
61-120 (moderately hard)	13
121-180 (hard)	7
> 180 (very hard)	4

The four wells having a total hardness over 180 ppm also have higher than normal chlorides and nitrates. This association of constituents suggests a local low grade pollution problem, probably resulting from either sewage or from the use of chemical fertilizers in the vicinity.

WATER SUPPLY

Utilization of Ground Water

An average of almost 31 mgd (million gallons daily) of ground water was withdrawn from aquifers in Morris County during 1960. Of this, about 16 mgd were pumped for public supply (table 5). Pumpage for industrial, commercial, and institutional use amounted to 11 mgd and pumpage for other uses, including domestic, farm, and small industrial use, accounted for 4 mgd.

Quaternary aquifers were the source of 77 percent, or 24 mgd, of the pumpage. (See table 6.) Precambrian aquifers supplied 4 mgd, Triassic aquifers 2 mgd, and Paleozoic aquifers 1 mgd.

Nearly half of the average daily withdrawal occurred in five municipalities. Pumpage in Hanover Township, amounting to 4.8 mgd, exceeded by far that in any other municipality (fig. 9). Parsippany-Troy Hills Township, Florham Park, Dover, and Roxbury Township each had pumpage of more than 2 mgd. Only four municipalities—Butler, Netcong, Pequannock Township, and Victory Gardens—had no reportable pumpage.

ATTACHMENT E

DWR-138 M
12/91

New Jersey Department of Environmental Protection and Energy
Bureau of Water Allocation

MONITORING WELL RECORD

Well Permit No. 25 - 41836
Atlas Sheet Coordinates ~~25~~ ~~12~~ 621 : :

OWNER IDENTIFICATION - Owner AUSTIN, PETER
Address P.O. BOX 29
City MORRIS PLAINS State NJ Zip Code

WELL LOCATION - If not the same as owner please give address. Owner's Well No. MW-1
County Morris Municipality MORRISTOWN TOWN Lot No. 11 Block No. 4801
Address Peter Austin, 89 Morris ST.

TYPE OF WELL (as per Well Permit Categories) MONITORING Date well completed 9/8/92
Regulatory Program Requiring Well Case I.D. #
CONSULTING FIRM/FIELD SUPERVISOR (if applicable) Tele. #

WELL CONSTRUCTION

Total depth drilled 22 ft.
Well finished to 22 ft.
Borehole diameter:
Top 6 in.
Bottom 6 in.
Well was finished: ☐ above grade ☑ flush mounted
If finished above grade, casing height (stick up) above land surface ft.
Was steel protective casing installed? ☐ Yes ☑ No

	Depth to Top (ft.) [From land surface]	Depth to Bottom (ft.) [From land surface]	Diameter (inches)	Type and Material
Inner Casing	6"	12	2	PVC
Outer Casing (Not Protective Casing)				
Screen (Note slot size)	12	22	2	PVC .020
Tail Piece				
Gravel Pack	11	22		Morie #2
Annular Seal/Grout	0	11		B. Pellets / Portland
Method of Grouting	tremie			

Static water level after drilling 5 ft.
Water level was measured using tape
Well was developed for 1 hours at 10+ gpm
Method of development pump
Was permanent pumping equipment installed? ☐ Yes ☑ No
Pump capacity gpm
Pump type:
Drilling Method Air W/ CASING
Drilling Fluid Type of Rig B-50
Name of Driller Donald Grahamer JR
Health and Safety Plan submitted? ☑ Yes ☐ No
Level of Protection used on site (circle one) None D C B A
N.J. License No. M1212
Name of Drilling Company ~~SUMMIT WELL DRILLING~~

GEOLOGIC LOG (Copies of other geologic logs and/or geophysical logs should be attached.)

attached

I certify that I have drilled the above-referenced well in accordance with all well permit requirements and all applicable State rules and regulations.

Driller's Signature Donald Grahamer Jr. Date 10-24-92

COPIES: White & Green - DEPE Canary - Driller Pink - Owner Goldenrod - Health Dept.

PLATE 2D

ATTACHMENT E1

MONITORING WELL CERTIFICATION - FORM A - AS-BUILT CERTIFICATION
(One form must be completed for each well)

Name of Permittee: Peter Austin
Name of Facility: VIP Cleaners/Former Morristown Tire Facility
Location: 89 Morris Street, Morristown, New Jersey 07960
NJPDES Permit No:

CERTIFICATION

Well Permit Number (As assigned by NJDEP's Well Drilling Permits Section (609-984-6831)):	2 5 -4 1 8 3 6
Owner's Well Number (As shown on the application or plans):	MW-1
Well Completion Date:	September 8, 1992
Distance from Top of Casing (cap off) to ground surface (one-hundredth of a foot):	-0.38 feet
Total Depth of Well (one-hundredth of a foot):	-22.50 feet
Depth to Top of Screen From Top of Casing (one-hundredth of a foot):	-11.62 feet
Screen Length (feet):	10.00 feet
Screen or Slot Size:	0.020 inch
Screen or Slot Material:	PVC
Casing Material: (PVC, Steel or Other-Specify):	PVC
Casing Diameter (inches):	2.0 inches
Static Water Level From Top of Casing at the Time of Installation (one-hundredth of a foot):	-6.0 feet
Yield (gallons per minute):	N/A Monitoring well
Length of Time Well Pumped or Bailed:	0 Hours 20 Minutes
Lithologic Log:	Attach

Authentication

I certify under penalty of law that, where applicable, I meet the requirements as specified on the reverse of this page, that I have personally examined and am familiar with the information submitted in this document and all attachments, and that, based on my inquiry of those individuals immediately responsible for obtaining the information, I believe the submitted information is true, accurate and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment.

James Johnston
Name (Type or Print)

James Johnston
Signature

New Jersey Professional Engineer
Certification or License No. GE 35273

Seal

Certification by Executive Officer or Duly Authorized Representative

Name (Type or Print)

Signature

Title

Date

ATTACHMENT E2
PLATE 2E

THIS FORM MUST BE COMPLETED BY THE PERMITTEE OR HIS/HER AGENT

GROUND WATER MONITORING WELL CERTIFICATION - FORM B - LOCATION CERTIFICATION

Name of Permittee: PETER AUSTIN

Name of Facility: 89 MORRIS STREET

Location: TOWN OF MORRISTOWN, MORRIS COUNTY, NEW JERSEY

NJPDES Number: _____

LAND SURVEYOR'S CERTIFICATION

Well Permit Number (As assigned by NJDEP's Water Allocation Section, 609-984-6831): This number must be permanently affixed to the well casing.	25-41836
Longitude (one-hundredth of a second):	West 74° 28' 40.07"
Latitude (one hundredth of a second):	North 40° 47' 47.61"
Elevation of Top of Casing (cap off) (one-hundredth of a foot):	329.93'
Elevation of Top of PVC or Collar (cap off) (one-hundredth of a foot):	329.55'
Owners Well Number (As shown on the application or plans):	MW-1

AUTHENTICATION

I certify under penalty of law that I have personally examined and am familiar with the information submitted in this document and all attachments and that, based on my inquiry of those individuals immediately responsible for obtaining the information, I believe the submitted information is true, accurate and complete. I am aware that there are significant penalties for submitting false information including the possibility of fine and imprisonment.

Gerald G. DeGroat 11/6/92

PROFESSIONAL LAND SURVEYOR'S SIGNATURE

Gerald G. DeGroat, L.S.

PROFESSIONAL LAND SURVEYOR'S NAME
(Please print or type)

SEAL

N.J. L.S. NO. 26791

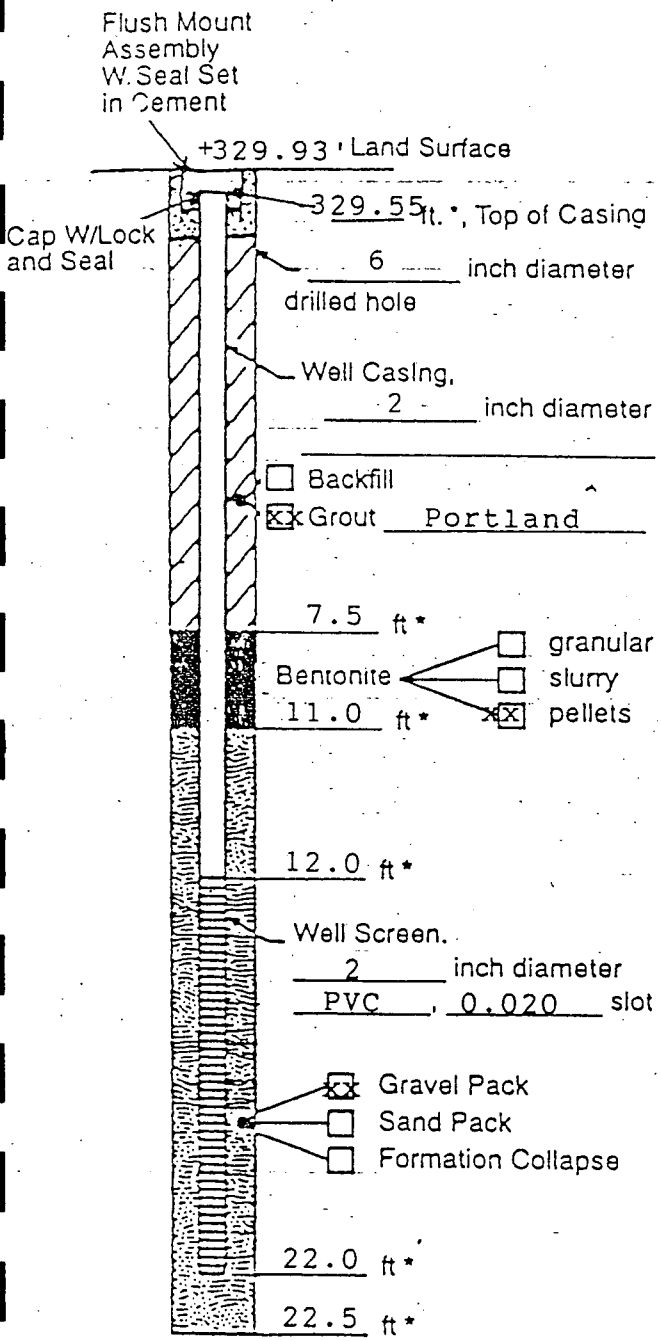
PROFESSIONAL LAND SURVEYOR'S LICENSE #

ATTACHMENT E3

PLATE 3.

PMK Ferris and Perricone CONSULTING ENGINEERS

WELL CONSTRUCTION LOG
(UNCONSOLIDATED)



Measuring Point is Top of Well Casing Unless Otherwise Noted.

*Depth Below Land Surface
** Top of Casing

VIP Cleaners/
Project Morristown Tire Well MW-1
Town/City Morristown
County Morris State New Jersey
Permit No. 25-41836
Land-Surface Elevation and Datum 329.93 feet [xx] Surveyed [ ] Estimated
Installation Date(s) September 8, 1992
Drilling Method Air rotary
Drilling Contractor Summit Drilling, Bridgewater,
Drilling Fluid N/A

Development Techniques(s) and Date(s)
Truck mounted centrifugal pump/ evacuate and recharge
September 8, 1992

Fluid Loss During Drilling ____ Gallo
Water Removed During Development ____ Gallo
Static Depth to Water ____ feet below T.O.C.
Pumping Depth to Water ____ feet below T.O.C.
Pumping Duration ____ Hours ____

Well Purpose Groundwater sampling, Remedial investigation subsequent to UST removal/discharge
Remarks Flush mounted completion

Prepared by ____

ATTACHMENT PLATE EA

LOG OF BORING

BORING NO. MW-2
SURFACE ELEV. 329.93'
COMPLETION DATE 9-08-92

WATER LEVEL: 6'-0"
DATE:
JOB NUMBER: 5182

DEPTH FT	SAMPLES	STANDARD PENETRATION RESISTANCE	MOISTURE CONTENT%	SYMBOL	DESCRIPTION
0					4" Bituminous concrete, crushed stone sub-base
		7			Fill material - gray silty clay, trace to little ash, medium stiff, moist
		7			
5		25			- Fill material grading to brown-gray clayey silt, little fine sand, little ash, moist, very stiff
10		32		ML	Light brown silt, trace to little fine sand, moist, very stiff
15		23			- grading to very moist
20		8		SP	Light brown fine sand, trace to little silt, loose, wet
25					Boring completed @ 22 1/2' on 9-08-92
30					

PMK GROUP MW15182 PLATE 2A

ATTACHMENT E5

PMK Group
CONSULTING ENVIRONMENTAL ENGINEERS
COMPLIANCE & REGULATORY MANAGEMENT

PRINCIPALS:
Philip M. Keegan
James Ferris, P.E.
Gerald Perricone, P.E.
James Johnston, P.E.

MANAGING PARTNERS
Terry C. Damon
Robert M. Gerard

January 8, 1993

State of New Jersey
Department of Environmental Protection
and Energy
Division of Responsible Party Site Remediation
401 East State Street
CN 028
Trenton, New Jersey 08625-0028

Attn: Mr. Eric Sussman

RE: REMEDIAL INVESTIGATION ADDENDUM REPORT
UNDERGROUND STORAGE TANK CLOSURE
VIP CLEANERS/FORMER MORRISTOWN TIRE FACILITY
89 MORRIS STREET
MORRISTOWN, NEW JERSEY
UST #0228873
TMS #C91-4319
CASE #92-02-14-1003
PMK GROUP #5182

Dear Mr. Sussman:

A review of site specific field logs has indicated that the static groundwater level reading prior to purging and sampling, measured on September 24, 1992 from within the casing of the groundwater monitoring well that had been installed at the subject site, to be 8.96 feet below the adjoining ground surface grade. It appears that this measurement was not included in the text of the Remedial Investigation Report dated November 23, 1992.

Additionally, the Chain of Custody included in the report for the groundwater samples collected from the referenced monitoring well on September 24, 1992 appears to indicate an incorrect date of sample relinquishment. The date on the bottom of the Chain of Custody Record should read 9/24/92, to be consistent with the groundwater sampling date.

493 Lehigh Avenue, Union, NJ 07083 • 908-686-0044 • Fax 908-686-0715

ATTACHMENT E6

ATTACHMENT F

Form DWR-143
7/81

NEW JERSEY DEPARTMENT OF ENVIRONMENTAL PROTECTION
DIVISION OF WATER RESOURCES
ENFORCEMENT & REGULATORY SERVICES

COMPLIANCE EVALUATION INSPECTION
PUBLIC COMMUNITY WATER SUPPLY

DATE 1/24/92

GENERAL INFORMATION

PURVEYOR/ FACILITY: PARSIPPANY TROY HILLS WATER DEPARTMENT

FILE LOCATION: PARSIPPANY TROY HILLS TWP, MORRIS CTY | PW-ID # 1429001

MAILING ADDRESS: 1001 PARSIPPANY BOULEVARD, PARSIPPANY NJ 07054

ADMIN.: JACK FERRARO | REQUIRED LICENSES T-1 W-4

BUSINESS TELEPHONE # Admin.: 201 263 7099 Licensed Operators: T-4 W-4 JACK FERRARO

FACILITY DESCRIPTION

SOURCES: descriptions, locations, capacities(mgd): 18 ACTIVE WELLS SEE ATTACHED SHEET A.

Est Tot Eff Cap: 11.628 MGD

TREATMENT: source, type, capacities(mgd): GAS CHLORINATION AT ALL WELLS 10 lb CAP.

Est Tot Eff Cap: 11.628 MGD

FINISHED WATER STORAGE: descriptions, locations, capacities(mg): 10 ACTIVE STORAGE TANKS SEE SHEET ATTACHED B

Est Tot Cap: 10.5 MG

EMERGENCY INTERCONNECTIONS: descriptions, available gallonage(mgd):

6" LINE WITH MOUNTAIN LAKES

6" LINE WITH DENVILLE

6" LINE WITH RANDOLPH

Est Tot Avail:

AUXILIARY POWER: location, type, capabilities: RIGHT ANGLE DRIVE AT WELL 12, 13, 14, 15, 19 AND BOOSTERS 1, 3, 4, 5. DIESEL GENERATOR AT WELL 4, 2, 8

ATTACHMENT H

DELIVERY INFORMATION

PLANT DELIVERED WATER (mgd,month,year) Max July 91 11.810 MGD Min FEB 91 5.243 MGD Annual Average 8.12 MGD

BULK PURCHASES (provider,mgd) SOUTHEAST MORRIS COUNTY MUA

BULK SALES (customer, mgd) NONE

NUMBER OF SERVICES 12,945 | % METERED 100

MUNICIPALITIES SERVED (est. services in each) ALL OF PARSIPPANY TROY HILLS TWP

TOTAL ESTIMATED POPULATION SERVICED 48,478

CURRENT/RECENT WATER RESTRICTIONS NONE

NEW CONSTRUCTION (Project Numbers) NEW BOOSTER FOR WELL #10, PAINT THREE TANKS, 16" MAIN

DISTRIBUTION MAINS: Sizing 4" (min) to 16" (max)
Pressures 20psi (min) to 175PSI (max)
Hydrants/Flushing Program 1500 /yearly

MONITORING & REPORTING

PARAMETER(S)	FREQUENCY REQUIRED	FREQUENCY PERFORMED
A-280	2 YRS	6/90 10/90 4/91 12/91
Coliform	65 MONTH	88 MONTH THRU 12/91
Inorganics	3 YRS	6/88 6/91
Nitrate	"	" "
Trihalomethanes	QUARTERLY	2,5,8,11/91
Organics	—	—
Turbidity	—	—
SECONDARIES	3 YRS	9/88 6/91
RADIOLOGICAL	4 YR	BEGAN 8/91

NAME OF LABORATORY PARTROY WATER DEPT (COLIFORM) CERTIFICATION # 14076

ADDRESS PASSAIC VALLEY WATER COMM # 16047

COMPLIANCE EVALUATION

SOURCE DEFICIENCIES WELL #7 OFF LINE

TREATMENT DEFICIENCIES NONE

ATTACHMENT 5 F2

Form DWR-143
7/81

NEW JERSEY DEPARTMENT OF ENVIRONMENTAL PROTECTION
DIVISION OF WATER RESOURCES
ENFORCEMENT & REGULATORY SERVICES

COMPLIANCE EVALUATION INSPECTION
PUBLIC COMMUNITY WATER SUPPLY

DATE 12/21/90

GENERAL INFORMATION

PURVEYOR/ FACILITY SOUTHEAST MORRIS COUNTY M.U.A.

FILE LOCATION MORRISTOWN, MORRIS COUNTY | PW-ID # 1424001

MAILING ADDRESS 101 WESTERN AVENUE, MORRISTOWN, N.J. 07960

ADMIN. WILLIAM HUTCHINSON, SUPERINTENDANT | REQUIRED LICENSES T-3 W-4

BUSINESS TELEPHONE # Admin. (201) ~~538-5600~~ 326-6880 Licensed Operators: T-3 W-4

326-6866

FACILITY DESCRIPTION

SOURCES: descriptions, locations, capacities(mgd): SEE ATTACHMENT #1

Est Tot Eff Cap: 14.102MGD

TREATMENT: source, type, capacities(mgd): SEE ATTACHMENT #1

Est Tot Eff Cap: 14.102MGD

FINISHED WATER STORAGE locations, capacities(mg): SEE ATTACHMENT #2

1424001
01 4,5,7,8,9,11
02 2,3,4,5,8,13
03 1,2,3,4,5,5
04 12,15

EMERGENCY INTERCONNECTIONS

6" w/ RANDOLPH

GREYSTONE

AUXILIARY POWER

PROVIDE POWER FOR BOOSTER

1.12 MG

3 MVA,

6" w/

GENERATORS

ATTACHMENT F3

NJDEP - DIVISION OF WATER RESOURCES
PUBLIC COMMUNITY WATER SUPPLY INSPECTION

DELIVERY INFORMATION

NT DELIVERED WATER (mgd,month,year) Max ____ Min ____ Annual Average ____

BULK PURCHASES (provider,mgd) FROM MORRIS COUNTY MUA @ .7MGD.

BULK SALES (customer, mgd) PARSIPPANY TROY HILLS @ .096MGD

NUMBER OF SERVICES 16,900 % METERED 100%

MUNICIPALITIES SERVED (est. services in each) MORRIS TOWNSHIP (6160) MORRISTOWN (4073) HANOVER TWP (4143) MORRIS PLAINS (1811) MENDHAM (342) HARDING (284) FLORHAM PARK (31) PARTROY (22) CHATHAM (21) RANDOLPH (13)

TOTAL ESTIMATED POPULATION SERVICED 65000

CURRENT/RECENT WATER RESTRICTIONS NONE

NEW CONSTRUCTION (Project Numbers) NONE

DISTRIBUTION MAINS: Sizing 4" (min) to 24" (max)
Pressures 28PSI (min) to 200 PSI (max)
Hydrants/Flushing Program 1800 / ANNUAL

MONITORING & REPORTING

PARAMETER(S)	FREQUENCY REQUIRED	FREQUENCY PERFORMED
Coliform	75/YEAR 6/MO	OK THRU 11/90
Inorganics	YEARLY	9/90
Nitrate	"	"
Trihalomethanes	QUARTERLY	2, 5, 9, 11, 90
Organics	3 YRS	12/88 9/90
Turbidity	DAILY	DAILY
A-280	2 X YR	6/89 11/85 6/90 8/90
SECONDARIES	YEARLY	12/88 6/85 6/90
SODIUM	YEARLY	12/88 " "
RADIOLOGICAL	4 YRS	12/88 DUE 92

NAME OF LABORATORY TOWNLEY RESEARCH CERTIFICATION # 18071

ADDRESS GARDEN STATE LAB 07044
WATER WORKS LAB 07673

COMPLIANCE EVALUATION

SOURCE DEFICIENCIES NONE

TMENT DEFICIENCIES NONE

ATTACHMENT F4

Form EWR-143
7/81

NEW JERSEY DEPARTMENT OF ENVIRONMENTAL PROTECTION
DIVISION OF WATER RESOURCES
ENFORCEMENT & REGULATORY SERVICES

COMPLIANCE EVALUATION INSPECTION
PUBLIC COMMUNITY WATER SUPPLY

DATE 10/3/89 & 4/9/90

GENERAL INFORMATION

PURVEYOR/ FACILITY: Madison Water Department

FILE LOCATION: Madison Borough, Morris County | PW-ID #: 14-17001

MAILING ADDRESS: Municipal Building, Kings Rd., Madison, NJ 07940

ADMIN.: James Allison - Twp. Administrator | REQUIRED LICENSES: T-1, W-3

BUSINESS TELEPHONE # Admin.: (201) 593-3038 | Licensed Operators: T-3 Sal DiBasse (201) 377-3007, (201) 822-3571, W-4

FACILITY DESCRIPTION

SOURCES: descriptions, locations, capacities(mgd): Well A (1.08 MGD) - John Ave; Well B (1.69 MGD) John Ave; Well C (1.92 MGD) - North Rd; Well D (1.2 MGD) - Loveland St; Well E (1.7 MGD) - Niles Ave. Wells A & B have been off-line since June '86 due to VOC contamination. Well D exceeded MCL's for tetrachloroethene for 9 months during Jan '89 thru May '90 (inclusive) Est Tot Eff Cap:

TREATMENT: source, type, capacities(mgd): Gas chlorination (W & T - 10lb capacity) at all wells

Est Tot Eff Cap: 7.59 MGD

FINISHED WATER STORAGE: descriptions, locations, capacities(mg): Two elevated tanks:

Madison Avenue 0.5 MG

Midwood Terrace 0.75 MG

Est Tot Cap: 1.25 MG

EMERGENCY INTERCONNECTIONS: descriptions, available gallonage(mgd): oral agreements for emergency use for: Florham Park Water Dept - 6" @ Ridgedale & Central; 8" @ Greenwood & Rosedale; 6" @ Brookdale. Southeast Morris County MUA - 6" @ Morris Tpk & Kitchell Rd (Morris Twp). (1) Chatham Water Dept: 10" @ Division & Main (Chatham Boro). (1) N.J. Amer. Water Co. - 8" @ Watchung & Noe (Chatham Twp) Est Tot Avail: UNKNOWN

AUXILIARY POWER: location, type, capabilities: Kohler diesel generator @ Wells B & D; gasoline powered generators @ Wells C & E; portable generators available for Chlorination

ATTACHMENT ES

NJDEP - DIVISION OF WATER RESOURCES
PUBLIC COMMUNITY WATER SUPPLY INSPECTION

DELIVERY INFORMATION

PLANT DELIVERED WATER (med month year) Max 2.155 MGD (Sept '88) Min 1.462 MGD (Aug '88) Annual Average 1.755 MGD (Sept '88 - Aug '89)

BULK PURCHASES (provider, mgd) None

BULK SALES (customer, mgd) None

NUMBER OF SERVICES 4800 % METERED

MUNICIPALITIES SERVED (est. services in each) Madison Borough - 4767, Chatham & Morris Twp - 33

TOTAL ESTIMATED POPULATION SERVICED 18,700

CURRENT/RECENT WATER RESTRICTIONS None

NEW CONSTRUCTION (Project Numbers) 4" main replacement

DISTRIBUTION MAINS: Sizing 4" (min) to 12" (max)
Pressures 48 psi (min) to 135 psi (max)
Hydrants/Flushing Program No flushing for 2 yrs.

MONITORING & REPORTING

PARAMETER(S)	FREQUENCY REQUIRED	FREQUENCY PERFORMED
A 280 +	twice/yr.	2/89 11/89
Coliform*	22/month	done 22/month
Inorganics*	once/3 yrs.	done 1/4/90
Nitrate*	" "	done 1/4/90
Trihalomethanes	one/quarter	2/89, 6/89, 9/89, 3/90
Organics		
Turbidity		
Radionuclides	once/4 yrs.	done 1986
Secondary Parameters*	once/3 yrs.	done 1/4/90

NAME OF LABORATORY *Madison Health Lab CERTIFICATION # 14049

ADDRESS 22 Central Ave - Madison

+Township Research & Consulting, Inc. - CERT. # 18071 - 1750 W. Front St., Plainfield, NJ 07063

COMPLIANCE EVALUATION

SOURCE DEFICIENCIES Wells A & D consistently exceed maximum contaminant levels (MCL) for tetrachloroethylene; Wells B & E have had concentrations at or above MCL's for tetrachloroethylene on a periodic basis; pollution sources (underground storage tanks) exists within 100 ft of all wells.

TREATMENT DEFICIENCIES Doors to all Chlorine Rooms lack panic type hardware

ATTACHMENT F6

Form DWR-145
4/81

DIVISION OF WATER RESOURCES
ENFORCEMENT & REGULATORY SERVICES

COMPLIANCE EVALUATION INSPECTION
PUBLIC COMMUNITY WATER SUPPLY

DATE July 27, 1989

GENERAL INFORMATION

SURVEYOR/ FACILITY: Florham Park Water Department

FILE LOCATION: Florham Park Borough / Morris County — PW-ID #: 1411001

MAILING ADDRESS: 111 Ridgedale Ave, Florham Park, N.J. 07932

ADMIN.: Dwight Longley — REQUIRED LICENSES: T - 3, W - 4

BUSINESS TELEPHONE # Admin.: 377-5800 Licensed Operators: T-3 R. Tantillo W-4 R. Tantillo

FACILITY DESCRIPTION

SOURCES: descriptions, locations, capacities(mgd): Well #1 - Capped and Sealed

Well #2 - 1000 GPM (1.44 MGD) - on Columbia Avenue.

Well #3 - 650 GPM (0.936 MGD) - at the Recreation Field.

Well #4 - 1300 GPM (1.872 MGD) - on Elm Street — Est Tot Eff Cap: 4.248 MGD

TREATMENT: source, type, capacities(mgd): All three wells have Gas Chlorination (WPT - capacity of 10#/day, e.

Wells 2, 3 and 4 are sequestered with Sodium Hexametaphosphate for Manganese.

A chlorine detector and a Scott Air Pack is located in the Well House

for Well #4 — Est Tot Eff Cap: 4.248 MGD

FINISHED WATER STORAGE: descriptions, locations, capacities(mg): There are two storage tanks.

1. 0.25 MG elevated tank at Columbia Turnpike.

2. 1.00 MG standpipe at Pollard Avenue

Est Tot Cap: 1.25 MG

EMERGENCY INTERCONNECTIONS: descriptions, available gallonage(mgd):

1. Madison Water Department: 6" - 12" lines - 0.500 MGD

2. East Hanover Water Department: 8" lines - 0.500 MGD

Est Tot Avail: 1.0 MGD

AUXILIARY POWER: location, type, capabilities:

Well #2 - Propane engine with a right angle drive.

Well #3 - Gasoline engine with a right angle drive.

Well #4 - Diesel Generator.

ATTACHMENT E1

NJDEP - DIVISION OF WATER RESOURCES
PUBLIC COMMUNITY WATER SUPPLY INSPECTION

DELIVERY INFORMATION

PLANT DELIVERED WATER (mgd,month,year) Max 1.908 MGD July 88 Min 0.875 MGD Feb '89 Annual Average 1.209 MGD 7/88 - 6/89

BULK PURCHASES (provider,mgd) NONE

BULK SALES (customer, mgd) NONE

NUMBER OF SERVICES 3,040 % METERED 100

MUNICIPALITIES SERVED (est. services in each)
1. Madison - 3 services
2. East Hanover - 10 services
3. Balance in Florham Park

TOTAL ESTIMATED POPULATION SERVICED 11,579

CURRENT/RECENT WATER RESTRICTIONS Odd and Even Days - Lawns, Car washing. Since 1982.

NEW CONSTRUCTION (Project Numbers) Very Little

DISTRIBUTION MAINS: Sizing 4" (min) to 12" (max)
Pressures 55 psi (min) to 90 psi (max)
Hydrants/Flushing Program ~350 hydrants/ once per year

MONITORING & REPORTING

PARAMETER(S)	FREQUENCY REQUIRED	FREQUENCY PERFORMED
Coliform	13 per month	13 per month
Inorganics	Every three years	Done 2/87; Due 2/90
Nitrate	" " "	" "
Trihalomethanes	Four per year	Done 5/88, 11/88, 2/89, 7/89; Due 9/89, 12/89
Organics	—	—
Turbidity	—	—
A-280	Twice per year	Done 11/88, 3/89; Due 12/89
Secondary	Every three years	Done 2/87; Due 2/90
Radiological	Every four years - Q+1'y	Done 1986; Due 1990

NAME OF LABORATORY Madison Health Dept | Environmental Profile Labs. CERTIFICATION # 14049 | 15526

ADDRESS Madison, New Jersey | Toms River, N.J.

COMPLIANCE EVALUATION

SOURCE DEFICIENCIES NONE

TREATMENT DEFICIENCIES NONE

ATTACHMENT F8

ATTACHMENT G

SOIL SURVEY OF

Morris County, New Jersey

United States Department of Agriculture
Soil Conservation Service

In cooperation with
New Jersey Agricultural Experiment Station
Cook College, Rutgers University

and the
New Jersey Department of Agriculture
State Soil Conservation Committee

ATTACHMENT G1

IIC—50 to 96 inches, strong-brown (7.5YR 5/6) and yellowish-brown (10YR 5/6) gravelly fine sandy loam; massive; friable; 15 percent angular pebbles of limestone; mildly alkaline; abrupt, wavy boundary. 10 to 50 inches thick.

R—96 inches, thinly bedded, hard, impure, gray limestone bedrock.

The solum ranges from 40 to 60 inches in thickness. Depth to the fragipan ranges from 20 to 36 inches, and depth to bedrock is 5 to 8 feet or more. In most places the contact of the granitic gneiss drift in the upper part of the profile with the weathered limestone in the lower part of the profile is ill defined. In some places where the drift is very thin, a major part of the solum consists of material formed in material weathered from limestone. In other places the upper material is so thick that the solum includes material weathered from limestone. The content of angular pebbles and cobbles ranges from 5 to 20 percent, and scattered stones are in some places. In areas that are not limed, reaction is medium acid near the surface and neutral to mildly alkaline in the lower part. In areas that are limed, reaction is less acid near the surface.

The A horizon is 10YR in hue, 3 or 4 in value, and 2 to 3 in chroma.

The matrix of the B horizon is 4 or 5 in value and 6 to 8 in chroma. High-chroma mottles are 5YR or 7.5YR in hue, 5 or 6 in value, and 6 to 8 in chroma. Low-chroma mottles are 7.5YR or 10YR in hue, 6 to 7 in value, and 1 to 3 in chroma. Depth to mottles ranges from 10 to 18 inches. This horizon ranges from heavy loam to clay loam or silty clay loam. In most places it has moderate, medium, subangular blocky structure above the fragipan and weak, very coarse, prismatic; weak, very thick, platy; or weak, very coarse, prismatic with massive interiors in the fragipan. The B horizon ranges from friable above the fragipan to firm or extremely firm in the fragipan. The coarse fragments range from almost completely granitic gneiss in the upper part to largely limestone chips in the lower part.

The C horizon has value of 4 or 5 and chroma of 6 to 8. In some places isolated spots or speckles of high chroma are in a lower chroma matrix. These bright spots are small chips of highly weathered limestone. This horizon is loam to sandy loam and their gravelly analogs.

Turbotville soils are associated with Washington, Bartley, Cokesbury, and Edneyville soils. They have low-chroma mottles, whereas Washington and Edneyville soils are not mottled. Turbotville soils do not have the low-chroma matrix horizon that is common in Cokesbury soils. They have low-chroma mottles nearer to the surface than Bartley soils.

Turbotville loam, 0 to 3 percent slopes (TuA).—This nearly level soil is in swales that cross terraces and at the margins of terraces that extend along the base of valley side slopes. Included in mapping are small areas of Cokesbury and Bartley soils.

The dominant properties that affect the use of this nearly level soil are slow runoff; its low position on the landscape, where it receives drainage from surrounding higher areas; and a water table that is locally perched on the slowly permeable fragipan.

This soil is used for pasture, hay, cultivated crops, and woodland. If it is used for intensive cultivation or improved pasture, improvement of drainage is necessary. Drainage diversions, subsurface interceptor drains, and spot drainage are effective in helping to improve the soil for intensive farming. Poor drainage limits the use of this soil for community development. Capability unit IIw-71.

Turbotville loam, 3 to 8 percent slopes (TuB).—This soil has the profile described as representative of the series. Included in mapping are small areas of Bartley, Edneyville, and Washington soils and some areas of stony or bouldery soils. This soil is in small, narrow waterways or elongated areas at the base of steeper slopes within large areas of better drained soils. It is generally managed along with areas of surrounding soils.

This gently sloping soil has lateral seepage on top of the fragipan and a seasonally perched water table. The hazard of erosion is moderate.

In areas that are not drained, pasture, hay, and woodland are common uses. For intensive cultivation, improvement of drainage is necessary. Using drainage diversions, subsurface interceptor drains, and spot drainage are suitable practices. In addition, a crop rotation, stripcropping, and diversions help to control erosion. Poor drainage and susceptibility to erosion limit the use of this soil for community development. Establishing a vegetative cover early during development, helps to reduce erosion. Capability unit IIe-71.

Urban Land

Urban land consists mostly of areas that are either paved or built upon. The soils in the remaining open spaces have been reworked to the extent that the original profile cannot be recognized. The characteristics of the material are variable.

Areas of Urban land are in community development. They are not suited to other purposes.

Urban land (Ua).—This mapping unit is in areas that are mostly well-drained, deep sandy, gravelly, or stony material of assorted glacial deposits. The areas are on uplands that mostly range from gently sloping to strongly sloping. The surface has been smoothed and in most places leveled. Included in mapping are areas of moderately steep soils and small areas of undisturbed Rockaway, Hibernia, Riverhead, and Boonton soils and the Ellington loamy subsoil variant. Not assigned to a capability unit.

Urban land, wet (Ub).—This mapping unit is in areas that are mostly poorly drained to very poorly drained silty and clayey soils. These areas are on low positions in the landscape and are nearly level. They have slow permeability and are shallow over a seasonal high water table. Included in mapping were small undisturbed areas of Whippany and Parsippany soils. Most of this mapping unit results from cut and fill operations associated with site preparation to achieve slightly elevated areas of better drained soil. Not assigned to a capability unit.

Urban land-Edneyville complex (Ue).—This complex consists of well-drained gravelly and loamy soils. Slopes range from 3 to 25 percent but are commonly 8 to 15 percent. The depth to bedrock is variable, depending on the amount of cut or fill, but ranges from 1 foot or 2 feet in deep cuts to more than 10 feet in other areas.

This complex is about 45 percent cut and fill land and 40 percent Edneyville soils. The soils are in a complex pattern, and it is impractical to map them separately. Making up the remaining percentage are Parker and other soils. In most places the soil or soil material is 15 to 20 percent angular pebbles, but in deep cuts angular coarse fragments as large as stones are more prevalent.

Permeability is moderate, and the available water capacity is moderate or low. Runoff is moderate to rapid, and the hazard of erosion is moderate to moderately severe. Not assigned to a capability unit.

Urban land-Haledon complex (Uh).—This complex consists of somewhat poorly drained and well-drained soils that have a high proportion of silt and fine sand. Slopes are commonly 3 to 8 percent but range to as much as 15 percent in a few areas. The soil material is more or less gravelly and cobbly glacial deposits of material derived mainly from red and brown shale and sandstone, traprock, and granitic gneiss. The depth to and the kind of bedrock are variable because of the thickness of the glacial deposits. Fractured red shale and basalt are extensive.

This complex is about 40 percent cut and fill land and a nearly equal percentage of Haledon soils. About 20 percent is Boonton, Holyoke, and other soils.

Depth to the water table is generally more than 10 feet. In areas where the fragipan has not been removed, a seasonally perched water table is on top of the fragipan within a depth of 2 feet. Permeability is slow to very slow in the fragipan. If this complex is used for community development, lateral seepage to foundations and to the surface on steeper slopes and in excavations is likely. Runoff is moderate to rapid, depending on slope. The hazard of erosion is moderate to severe, depending on slope. Not assigned to a capability unit.

Urban land-Neshaminy complex (Uk).—This complex consists of well-drained, gently sloping stony soils. Slopes commonly range from 3 to 8 percent. The soil material is mainly weathered traprock and some small thin fragments of brown shale and sandstone. Depth to bedrock is variable, depending on the amount of excavation or fill, but ranges from 1 foot to more than 10 feet.

This complex is about 40 percent Neshaminy soils and 40 percent soils that have been disturbed by the activities of man to the extent that the original soil profile no longer remains. The soils occur in a complex pattern, and they cannot be mapped separately. Most areas also include small areas of more sloping Neshaminy soils, soils that are similar to this Neshaminy soil but have a mottled subsoil, Penn soils, and Ellington loamy subsoil variants.

This complex is deep over a water table and has moderate permeability, rapid runoff, moderate to severe hazard of erosion, and high available water capacity. Practices are needed to help control runoff and erosion, particularly on deep cuts. Suitable practices include constructing diversions, seeding with adapted grasses to help control erosion, and constructing retaining walls to stabilize deep cuts. Not assigned to a capability unit.

Urban land-Penn complex (Um).—This complex consists of well-drained soils that are underlain by red shale bedrock. It is near the bottom of slopes of the Watchung Mountains. Slopes commonly range from 0 to 10 percent. The soil material is residuum weathered from the underlying shale bedrock.

This complex is about 40 percent cut and fill land and 40 percent Penn soils. The soils are in a complex pattern and cannot be mapped separately. Making up the rest of the complex are small areas of Klinesville and Reaville soils.

On the sloping soils rapid runoff, a moderate hazard of erosion, and a moderate to low available water capacity are the major limitations. In construction areas, establishment of grass cover and diversion of long slopes by use of diversions or streets are beneficial in controlling runoff and erosion. Not assigned to a capability unit.

Urban land-Preakness complex (Un).—This complex consists of poorly drained, nearly level gravelly and sandy soils. The soil material is loose, relatively unweathered, stratified and sorted sandy and gravelly glacial outwash.

This complex is about 50 percent soils that have been disturbed by the activities of man to the extent that the original profile no longer remains and 40 percent Preakness soils. These soils occur in a complex pattern, and they cannot be mapped separately. Making up the remaining 10 percent are mainly Pompton and Riverhead soils.

Under natural drainage conditions the water table is at or near the surface for long periods during fall, winter, and spring. This complex is subject to flooding for long periods. In many places depth to the water table is increased, and the hazard of flooding is reduced by improved drainage or filling of low areas. Determination of the kind and degree of limitations to use of this complex requires onsite investigation. Not assigned to a capability unit.

Urban land-Riverhead complex (Up).—This complex consists of well-drained, nearly level to strongly sloping sandy and gravelly soils. It is mainly on undulating outwash terraces and plains in valleys, and in basins within and near the granitic highlands. Most areas are within the valleys of the Rockaway and Musconetcong River and in the basin formerly occupied by glacial Lake Passaic in the vicinity of Pompton Plains. Slopes range from 0 to 20 percent but are typically 5 to 12 percent. The underlying material is loose, unweathered, stratified and sorted sand and gravel outwash, mostly of granitic material that contains some shale, sandstone, quartzite, and conglomerate. Coarse fragments are mainly gravel and a few cobbles, but in places there are stones and boulders. Depth to a seasonally high water table is generally more than 10 feet.

This complex is about 55 percent soils that have been disturbed by man to the extent that the original profile no longer remains and 35 percent Riverhead soils. Making up the remaining percentage are areas of Otisville and Pompton soils.

Permeability is rapid, and runoff is moderate. If this complex is used for community development, practices are needed to control runoff and erosion. Using a grass cover and diversions in critical areas are suitable practices. Not assigned to a capability unit.

Urban land-Rockaway complex, gently sloping and sloping (UrC).—This complex consists of well-drained, gently sloping or sloping gravelly sandy loam soils. It is mainly in upland areas of intensive residential or industrial development in the vicinity of Rockaway, Dover, and Boonton. Slopes range from 0 to 15 percent.

ATTACHMENT G3

ATTACHMENT H

BUREAU OF FIELD OPERATIONS - SITE ASSESSMENT SECTION

REPORT OF PHONE CALL

DATE November 4, 1993

TIME 10:00 A.M.

SITE NAME VIP Cleaners

LOCATION 89 Morris Street, Morristown, Morris County.

CALLER David Dibblee HSMS IV

PERSON CONTACTED Peter Austin PHONE NO [redacted]

Personally Identifiable Information removed by EPA PRS – 8/9/13

AFFILIATION Owner, Block 4801 Lot 11, Morristown, Morris County

SUMMARY OF CALL Mr Austin returned a call made earlier in the week. Permission to enter the V.I.P Cleaners site was granted verbally from Mr. Austin. A contact was given by the name David Kawash of the Michele Arnold Hair Salon. It was discussed that several tenants are at this location; a hair salon, cleaners, auto detailing, and a garden center. Mr Austin gave his home phone in Florida. (listed above) for further questions and information requests.

David E. Dibblee

SIGNATURE

ATTACHMENT H1

ATTACHMENT I

State of New Jersey
Department of Environmental Protection and Energy
Division of Publicly Funded Site Remediation
CN 413
Trenton, NJ 08625-0413
Tel. # 609-984-2902
Fax. # 609-633-2360

Jeanne M. Fox
Acting Commissioner

Anthony J. Farro
Director

TO: VIP Cleaners file

FROM: David Dibblee, HSMS IV

RE: December 13, 1993 Pre Sampling Assessment (PSA)

On December 13, 1993 David Dibblee and Andrew Cyr met with Sonny Din of VIP Cleaners at 89 Morris Street, Morristown, Morris County for an inspection of the facility and interview. Mr. Din explained that approximately 4 years ago he started his business, known as VIP cleaners, at 89 Morris Street. Prior to his business the store was a retail computer shop. Dry cleaning was conducted at the site until approximately 1 1/2 years ago when he ceased dry cleaning operations at the site. At this time he became a "drop" shop where clothes to be dry cleaned are dropped off and picked up by customers. Only "spot" cleaning of clothes is conducted at the site using very small amounts of dry cleaning chemicals. Mr. Din indicated that he believed that the entire site was at one time a dry cleaning business operated by current site owner, Peter Austin. (He believed the name to be Carolina Laundry)

An inspection of the space occupied by VIP Cleaners was conducted which found no floor drains, septic or other pathways to groundwater. The inspection then moved to the outside of the building. No drains, with the exception of a storm drain on the west side of the building, or pathways to ground water were discovered here. The entire site was paved.

Upon completing the exterior inspection we entered the shop located at the rear of the VIP Cleaners store. This was a car detailing and electronics store operated by Curt Bush. Mr. Bush was interviewed regarding his history at the site. He indictaed that he has been at the site for approximately 6 years and prior to his occupancy a lawn mover repair shop operated in his shop space. Mr. Bush believed this business was at the site for only a short time, possibly only a couple of years. To his knowledge prior to the lawnmower shop being at the site, the entire site was known as Carolina Laundry or Cleaners. He also indicated that a small section of the building was used by Morristown Memorial Hospital as a cleaning shop for its linens etc. at the time the entire site was

a dry cleaning operation. Since the section of the building occupied by Mr. Bush contained garage bays it was asked if floor drains existed in these areas. He had indicated that there were floor drains in his garages but that he had these installed himself when he originally opened his business. At this time he displayed photographs of the renovations he had made to the building, including the floor drain installation. These drains are connected to the sanitary sewer.

The remaining shop at the rear of the building was a gardening shop which sold plants and garden supplies. The exterior of this building was inspected which did not reveal any suspect areas of concern. The inspectors left the site at 1100 hours.

ATTACHMENT J

State of New Jersey
Department of Environmental Protection and Energy
Division of Publicly Funded Site Remediation
CN 413
Trenton, NJ 08625-0413
Tel. # 609-984-2902
Fax. # 609-633-2360

Jeanne M. Fox
Acting Commissioner

Anthony J. Farro
Director

The population residing within a 4-mile radius of the VIP Cleaners site was compiled from the EPA GEMS database and available population data from the 1990 census. For populations within a 1/2 mile of the site, the area for the respective distance interval was calculated in square miles and multiplied by the residents per square mile from the 1990 census.

0 - 1/4 mile:

$0.25^2 \times 3.14 = 0.19625$ sq. miles x 5,510 = 1,080

1/4 - 1/2 mile:

$0.5^2 \times 3.14 = 0.785 - 0.19625 = 0.58875$ sq. miles x 5,510 = 3,245

The remaining population data was taken from the EPA GEMS database for the respective distance intervals.

1/2	-	1	5,875
1	-	2	13,285
2	-	3	6,260
3	-	4	29,145

ATTACHMENT J1

ATTACHMENT K

INDUSTRIAL CORROSION MANAGEMENT INC.
1152 Route 10
Randolph, NJ 07869
Phone # (201) 584-0330

TASK IV
NJDEPE-CLP FORMAT
INORGANIC/ORGANIC SAMPLE DATA SUMMARY PACKAGE

VI062194
SDG NO. 498

CONTRACT X-26174/A60084
PROFESSIONAL LABORATORY ANALYTICAL
SERVICES FOR NJDEPE

ATTACHMENT K1

ANALYTICAL DATA PACKAGE FOR THE
NEW JERSEY DEPARTMENT OF ENVIRONMENTAL PROTECTION & ENERGY
TRENTON, NEW JERSEY 08625

DIVISION: DPFSR BUREAU: Site Assessment

CASE NAME: VI062194 CASE #: —

Note: This is a two sided form. Data Qualifiers on reverse side.

FIELD SAMPLE NUMBERS	LABORATORY SAMPLE NUMBERS	SAMPLE LOCATION	DATE and TIME OF COLLECTION
498	190939	GW-1	6/23/94 1235-1300
499	190940	GW-2	6/23/94 1540-1605
501	190941	MW-1	6/23/94 1110-1215
502	190942	MW-2	6/23/94 1110-1215
503	190943	FB-Bailer	6/23/94 1050-1100
504	190944	Trip Blank	—

LABORATORY NAME: Industrial Corrosion Mgmt. Inc. LOCATION: 1152 Route 10 Randolph, NJ

NJDEPE CERTIFICATION No: 14116 (IF APPLICABLE) DATE SUBMITTED: 8/2/94

Paula K. Blaze
LABORATORY QA OFFICER (PRINT)

Paula K. Blaze
LABORATORY QA OFFICER: (SIGNATURE)

Richard S. Levine
LABORATORY MANAGER: (PRINT)

LABORATORY MANAGER: (SIGNATURE)

NJDEPE FORM A-1A (9/91)

ATTACHMENT K2

1A

VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

498__

Lab Name: ICM, Inc. Contract: A60084

Lab Code: ICM Case No.: SAS No.: SDG No.: 498__

Matrix: (soil/water) WATER Lab Sample ID:

Sample wt/vol: 5.000 (g/mL) ML Lab File ID: C0841

Level: (low/med) LOW Date Received: 06/24/94

% Moisture: not dec._____ Date Analyzed: 07/03/94

GC Column: SP1000 ID: 2.00 (mm) Dilution Factor: 1.0

Soil Extract Volume: _____ (uL) Soil Aliquot Volume: _____ (uL)

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L	Q
74-87-3	Chloromethane	10.	U
74-83-9	Bromomethane	10.	U
75-01-4	Vinyl Chloride	10.	U
75-00-3	Chloroethane	10.	U
75-09-2	Methylene Chloride	10.	U
67-64-1	Acetone	10.	U
75-15-0	Carbon Disulfide	10.	U
75-35-4	1,1-Dichloroethene	10.	U
75-34-3	1,1-Dichloroethane	10.	U
540-59-0	1,2-Dichloroethene (total)	10.	U
67-66-3	Chloroform	10.	U
107-06-2	1,2-Dichloroethane	10.	U
78-93-3	2-Butanone	10.	U
71-55-6	1,1,1-Trichloroethane	10.	U
56-23-5	Carbon Tetrachloride	10.	U
75-27-4	Bromodichloromethane	10.	U
78-87-5	1,2-Dichloropropane	10.	U
10061-01-5	cis-1,3-Dichloropropene	10.	U
79-01-6	Trichloroethene	10.	U
124-48-1	Dibromochloromethane	10.	U
79-00-5	1,1,2-Trichloroethane	10.	U
71-43-2	Benzene	10.	U
10061-02-6	trans-1,3-Dichloropropene	10.	U
75-25-2	Bromoform	10.	U
108-10-1	4-Methyl-2-Pentanone	10.	U
591-78-6	2-Hexanone	10.	U
127-18-4	Tetrachloroethene	10.	U
79-34-5	1,1,2,2-Tetrachloroethane	10.	U
108-88-3	Toluene	10.	U
108-90-7	Chlorobenzene	10.	U
100-41-4	Ethylbenzene	10.	U
100-42-5	Styrene	10.	U
1330-20-7	Xylene (total)	10.	U

1E

VOLATILE ORGANICS ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

EPA SAMPLE NO.

498__

Lab Name: ICM, Inc. Contract: A60084

Lab Code: ICM Case No.: SAS No.: SDG No.: 498__

Matrix: (soil/water) WATER Lab Sample ID:

Sample wt/vol: 5.000 (g/mL) ML Lab File ID: C0841

Level: (low/med) LOW Date Received: 06/24/94

% Moisture: not dec._____ Date Analyzed: 07/03/94

GC Column: SP1000 ID: 2.00 (mm) Dilution Factor: 1.0

Soil Extract Volume: _____ (uL) Soil Aliquot Volume: _____ (uL)

Number TICs found: 0 CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L

	CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
1.					
2.					
3.					
4.					
5.					
6.					
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1B

SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

498__

b Name: ICM, Inc. Contract: A60084

Code: ICM Case No.: SAS No.: SDG No.: 498__

rix: (soil/water) WATER Lab Sample ID: 190939

ple wt/vol: 1050.0 (g/mL) ML Lab File ID: I2108

el: (low/med) LOW Date Received: 06/24/94

oisture: _____ decanted: (Y/N)___ Date Extracted: 06/29/94

entrated Extract Volume: 1000.0 (uL) Date Analyzed: 07/20/94

ection Volume: 2.0 (uL) Dilution Factor: 1.0

Cleanup: (Y/N) N pH: ____

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L	Q
108-95-2	Phenol	10.	U
111-44-4	bis(2-Chloroethyl)ether	10.	U
95-57-8	2-Chlorophenol	10.	U
541-73-1	1,3-Dichlorobenzene	10.	U
106-46-7	1,4-Dichlorobenzene	10.	U
95-50-1	1,2-Dichlorobenzene	10.	U
95-48-7	2-Methylphenol	10.	U
108-60-1	2,2'-oxybis(1-Chloropropane)	10.	U
106-44-5	4-Methylphenol	10.	U
621-64-7	N-Nitroso-di-n-propylamine	10.	U
67-72-1	Hexachloroethane	10.	U
98-95-3	Nitrobenzene	10.	U
78-59-1	Isophorone	10.	U
88-75-5	2-Nitrophenol	10.	U
105-67-9	2,4-Dimethylphenol	10.	U
111-91-1	bis(2-Chloroethoxy)methane	10.	U
120-83-2	2,4-Dichlorophenol	10.	U
120-82-1	1,2,4-Trichlorobenzene	10.	U
91-20-3	Naphthalene	10.	U
106-47-8	4-Chloroaniline	10.	U
87-68-3	Hexachlorobutadiene	10.	U
59-50-7	4-Chloro-3-methylphenol	10.	U
91-57-6	2-Methylnaphthalene	10.	U
77-47-4	Hexachlorocyclopentadiene	10.	U
88-06-2	2,4,6-Trichlorophenol	10.	U
95-95-4	2,4,5-Trichlorophenol	24.	U
91-58-7	2-Chloronaphthalene	10.	U
88-74-4	2-Nitroaniline	24.	U
131-11-3	Dimethylphthalate	10.	U
208-96-8	Acenaphthylene	10.	U
606-20-2	2,6-Dinitrotoluene	10.	U
99-09-2	3-Nitroaniline	24.	U
83-32-9	Acenaphthene	10.	U

1C

SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

498__

ab Name: ICM, Inc. Contract: A60084

o Code: ICM Case No.: SAS No.: SDG No.: 498__

atrix: (soil/water) WATER Lab Sample ID: 190939

mple wt/vol: 1050.0 (g/mL) ML Lab File ID: I2108

evel: (low/med) LOW Date Received: 06/24/94

Moisture: _____ decanted: (Y/N)___ Date Extracted: 06/29/94

oncentrated Extract Volume: 1000.0 (uL) Date Analyzed: 07/20/94

ection Volume: 2.0 (uL) Dilution Factor: 1.0

PC Cleanup: (Y/N) N pH: ____

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L	Q
51-28-5	2,4-Dinitrophenol	24.	U
100-02-7	4-Nitrophenol	24.	U
132-64-9	Dibenzofuran	10.	U
121-14-2	2,4-Dinitrotoluene	10.	U
84-66-2	Diethylphthalate	10.	U
7005-72-3	4-Chlorophenyl-phenylether	10.	U
86-73-7	Fluorene	10.	U
100-01-6	4-Nitroaniline	24.	U
534-52-1	4,6-Dinitro-2-methylphenol	24.	U
86-30-6	N-Nitrosodiphenylamine (1)	10.	U
101-55-3	4-Bromophenyl-phenylether	10.	U
118-74-1	Hexachlorobenzene	10.	U
87-86-5	Pentachlorophenol	24.	U
85-01-8	Phenanthrene	10.	U
120-12-7	Anthracene	10.	U
86-74-8	Carbazole	10.	U
84-74-2	Di-n-butylphthalate	10.	U
206-44-0	Fluoranthene	10.	U
129-00-0	Pyrene	10.	U
85-68-7	Butylbenzylphthalate	10.	U
91-94-1	3,3'-Dichlorobenzidine	10.	U
56-55-3	Benzo(a)anthracene	10.	U
218-01-9	Chrysene	10.	U
117-81-7	bis(2-Ethylhexyl)phthalate	10.	U
117-84-0	Di-n-octylphthalate	10.	U
205-99-2	Benzo(b)fluoranthene	10.	U
207-08-9	Benzo(k)fluoranthene	10.	U
50-32-8	Benzo(a)pyrene	10.	U
193-39-5	Indeno(1,2,3-cd)pyrene	10.	U
53-70-3	Dibenz(a,h)anthracene	10.	U
191-24-2	Benzo(g,h,i)perylene	10.	U

(1) - Cannot be separated from diphenylamine

1F

SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

EPA SAMPLE NO.

498__

b Name: ICM, Inc. Contract: A60084

b Code: ICM Case No.: SAS No.: SDG No.: 498__

trix: (soil/water) WATER Lab Sample ID: 190939

ple wt/vol: 1050.0 (g/mL) ML Lab File ID: I2108

vel: (low/med) LOW Date Received: 06/24/94

oisture: _____ decanted: (Y/N)___ Date Extracted: 06/29/94

ncentrated Extract Volume: 1000.0 (uL) Date Analyzed: 07/20/94

ection Volume: 2.0 (uL) Dilution Factor: 1.0

C Cleanup: (Y/N) N pH: ____

umber TICs found: 3 CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L

	CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
1.	- -	UNKNOWN	11.23	2.	BJ
2.	- -	UNKNOWN	12.71	5.	BJ
3.	- -	UNKNOWN	16.48	3.	J
4.					
5.					
6.					
7.					
8.					
9.					
0.					
1.					
2.					
3.					
4.					
5.					
6.					
7.					
8.					
9.					
0.					
1.					
2.					
3.					
4.					
5.					
6.					
7.					
8.					
9.					
0.					

EPA SAMPLE NO.

PESTICIDE ORGANICS ANALYSIS DATA SHEET

498

Lab Name: ICM, Inc. Contract: A60084

Lab Code: ICM Case No.: SAS No.: SDG No.: 498

Matrix: (soil/water) WATER Lab Sample ID: 190939

Sample wt/vol: 1040.0 (g/mL) ML Lab File ID: 01249

% Moisture: _____ decanted: (Y/N)___ Date Received: 06/24/94

Extraction: (SepF/Cont/Sonc) SEPF Date Extracted: 06/29/94

Concentrated Extract Volume: 10000.0 (uL) Date Analyzed: 07/19/94

Injection Volume: 1.0 (uL) Dilution Factor: 1.0

GPC Cleanup: (Y/N) N pH: 6.8 Sulfur Cleanup: (Y/N) N

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L	Q
319-84-6	alpha-BHC	.048	U
319-85-7	beta-BHC	.048	U
319-86-8	delta-BHC	.048	U
58-89-9	gamma-BHC (Lindane)	.048	U
76-44-8	Heptachlor	.048	U
309-00-2	Aldrin	.048	U
1024-57-3	Heptachlor epoxide	.048	U
959-98-8	Endosulfan I	.048	U
60-57-1	Dieldrin	.096	U
72-55-9	4,4'-DDE	.096	U
72-20-8	Endrin	.096	U
33213-65-9	Endosulfan II	.096	U
72-54-8	4,4'-DDD	.096	U
1031-07-8	Endosulfan Sulfate	.096	U
50-29-3	4,4'-DDT	.096	U
72-43-5	Methoxychlor	.48	U
53494-70-5	Endrin ketone	.096	U
7421-93-4	Endrin aldehyde	.096	U
5103-71-9	alpha-Chlordane	.048	U
5103-74-2	gamma-Chlordane	.048	U
8001-35-2	Toxaphene	4.8	U
12674-11-2	Aroclor-1016	.96	U
11104-28-2	Aroclor-1221	1.9	U
11141-16-5	Aroclor-1232	.96	U
53469-21-9	Aroclor-1242	.96	U
12672-29-6	Aroclor-1248	.96	U
11097-69-1	Aroclor-1254	.96	U
11096-82-5	Aroclor-1260	.96	U

FORM I PEST 3/90

ATTACHMENT K8

U.S. EPA - CLP

1

INORGANIC ANALYSES DATA SHEET

EPA SAMPLE NO.

498

b Name: ICM Contract: A60084

Code: Case No.: SAS No.: SDG No.: 498

trix (soil/water): WATER Lab Sample ID: 190939

el (low/med): LOW Date Received: 06/24/94

olids: 0.0

Concentration Units (ug/L or mg/kg dry weight): UG/L

CAS No.	Analyte	Concentration	C	Q	M
7429-90-5	Aluminum	5070			P
7440-36-0	Antimony	29.8	U		P
7440-38-2	Arsenic	1.9	B	W	F
7440-39-3	Barium	119	B		P
7440-41-7	Beryllium	0.30	U		P
7440-43-9	Cadmium	1.9	U		P
7440-70-2	Calcium	112000			P
7440-47-3	Chromium	10.2			P
7440-48-4	Cobalt	4.6	U		P
7440-50-8	Copper	18.8	B		P
7439-89-6	Iron	10700			P
7439-92-1	Lead	5.9			F
7439-95-4	Magnesium	49500			P
7439-96-5	Manganese	260			P
7439-97-6	Mercury	0.10	U		CV
7440-02-0	Nickel	8.1	U		P
7440-09-7	Potassium	3850	B		P
7782-49-2	Selenium	1.4	U	W	F
7440-22-4	Silver	2.7	U		P
7440-23-5	Sodium	68800			P
7440-28-0	Thallium	2.0	B	W	F
7440-62-2	Vanadium	23.4	B		P
7440-66-6	Zinc	47.3			P
	Cyanide	19.6			AS

or Before: WHITE Clarity Before: CLOUDY Texture:

r After: COLORLESS Clarity After: CLEAR Artifacts:

ents:
EE CASE NARRATIVE FOR CYANIDE COLOR/CLARITY INFORMATION.
AMPLE CONTAINS SOME SEDIMENT.

FORM I - IN

ILM03.0

ATTACHMENT K9

1A

VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

499__

Lab Name: ICM, Inc. Contract: A60084

Lab Code: ICM Case No.: SAS No.: SDG No.: 498__

Matrix: (soil/water) WATER Lab Sample ID:

Sample wt/vol: 5.000 (g/mL) ML Lab File ID: C0842

Level: (low/med) LOW Date Received: 06/24/94

% Moisture: not dec._____ Date Analyzed: 07/03/94

GC Column: SP1000 ID: 2.00 (mm) Dilution Factor: 1.0

Soil Extract Volume: _____ (uL) Soil Aliquot Volume: _____ (uL)

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L	Q
74-87-3	Chloromethane	10.	U
74-83-9	Bromomethane	10.	U
75-01-4	Vinyl Chloride	10.	U
75-00-3	Chloroethane	10.	U
75-09-2	Methylene Chloride	10.	U
67-64-1	Acetone	10.	U
75-15-0	Carbon Disulfide	10.	U
75-35-4	1,1-Dichloroethene	10.	U
75-34-3	1,1-Dichloroethane	10.	U
540-59-0	1,2-Dichloroethene (total)	10.	U
67-66-3	Chloroform	10.	U
107-06-2	1,2-Dichloroethane	10.	U
78-93-3	2-Butanone	10.	U
71-55-6	1,1,1-Trichloroethane	10.	U
56-23-5	Carbon Tetrachloride	10.	U
75-27-4	Bromodichloromethane	10.	U
78-87-5	1,2-Dichloropropane	10.	U
10061-01-5	cis-1,3-Dichloropropene	10.	U
79-01-6	Trichloroethene	10.	U
124-48-1	Dibromochloromethane	10.	U
79-00-5	1,1,2-Trichloroethane	10.	U
71-43-2	Benzene	10.	U
10061-02-6	trans-1,3-Dichloropropene	10.	U
75-25-2	Bromoform	10.	U
108-10-1	4-Methyl-2-Pentanone	10.	U
591-78-6	2-Hexanone	10.	U
127-18-4	Tetrachloroethene	30.	
79-34-5	1,1,2,2-Tetrachloroethane	10.	U
108-88-3	Toluene	10.	U
108-90-7	Chlorobenzene	10.	U
100-41-4	Ethylbenzene	10.	U
100-42-5	Styrene	10.	U
1330-20-7	Xylene (total)	10.	U

1E

VOLATILE ORGANICS ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

EPA SAMPLE NO.

499__

Lab Name: ICM, Inc. Contract: A60084

Lab Code: ICM Case No.: SAS No.: SDG No.: 498__

Matrix: (soil/water) WATER Lab Sample ID:

Sample wt/vol: 5.000 (g/mL) ML Lab File ID: C0842

Level: (low/med) LOW Date Received: 06/24/94

% Moisture: not dec._____ Date Analyzed: 07/03/94

GC Column: SP1000 ID: 2.00 (mm) Dilution Factor: 1.0

Soil Extract Volume: _____ (uL) Soil Aliquot Volume: _____ (uL)

Number TICs found: 0 CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L

	CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
1.					
2.					
3.					
4.					
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1B

SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

499__

ab Name: ICM, Inc. Contract: A60084

ab Code: ICM Case No.: SAS No.: SDG No.: 498__

atrix: (soil/water) WATER Lab Sample ID: 190940

ample wt/vol: 1000.0 (g/mL) ML Lab File ID: I2109

vel: (low/med) LOW Date Received: 06/24/94

Moisture: _____ decanted: (Y/N)___ Date Extracted: 06/29/94

ncentrated Extract Volume: 1000.0 (uL) Date Analyzed: 07/20/94

njection Volume: 2.0 (uL) Dilution Factor: 1.0

C Cleanup: (Y/N) N pH: ____

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L	Q
108-95-2	Phenol	10.	U
111-44-4	bis(2-Chloroethyl)ether	10.	U
95-57-8	2-Chlorophenol	10.	U
541-73-1	1,3-Dichlorobenzene	10.	U
106-46-7	1,4-Dichlorobenzene	10.	U
95-50-1	1,2-Dichlorobenzene	10.	U
95-48-7	2-Methylphenol	10.	U
108-60-1	2,2'-oxybis(1-Chloropropane)	10.	U
106-44-5	4-Methylphenol	10.	U
621-64-7	N-Nitroso-di-n-propylamine	10.	U
67-72-1	Hexachloroethane	10.	U
98-95-3	Nitrobenzene	10.	U
78-59-1	Isophorone	10.	U
88-75-5	2-Nitrophenol	10.	U
105-67-9	2,4-Dimethylphenol	10.	U
111-91-1	bis(2-Chloroethoxy)methane	10.	U
120-83-2	2,4-Dichlorophenol	10.	U
120-82-1	1,2,4-Trichlorobenzene	10.	U
91-20-3	Naphthalene	10.	U
106-47-8	4-Chloroaniline	10.	U
87-68-3	Hexachlorobutadiene	10.	U
59-50-7	4-Chloro-3-methylphenol	10.	U
91-57-6	2-Methylnaphthalene	10.	U
77-47-4	Hexachlorocyclopentadiene	10.	U
88-06-2	2,4,6-Trichlorophenol	10.	U
95-95-4	2,4,5-Trichlorophenol	25.	U
91-58-7	2-Chloronaphthalene	10.	U
88-74-4	2-Nitroaniline	25.	U
131-11-3	Dimethylphthalate	10.	U
208-96-8	Acenaphthylene	10.	U
606-20-2	2,6-Dinitrotoluene	10.	U
99-09-2	3-Nitroaniline	25.	U
83-32-9	Acenaphthene	10.	U

1C

SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

499__

Name: ICM, Inc. Contract: A60084

Code: ICM Case No.: SAS No.: SDG No.: 498__

Matrix: (soil/water) WATER Lab Sample ID: 190940

Sample wt/vol: 1000.0 (g/mL) ML Lab File ID: I2109

Level: (low/med) LOW Date Received: 06/24/94

Moisture: _____ decanted: (Y/N)___ Date Extracted: 06/29/94

Concentrated Extract Volume: 1000.0 (uL) Date Analyzed: 07/20/94

Injection Volume: 2.0 (uL) Dilution Factor: 1.0

GPC Cleanup: (Y/N) N pH: ____

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L	Q
51-28-5	2,4-Dinitrophenol	25.	U
100-02-7	4-Nitrophenol	25.	U
132-64-9	Dibenzofuran	10.	U
121-14-2	2,4-Dinitrotoluene	10.	U
84-66-2	Diethylphthalate	.8	BJ
7005-72-3	4-Chlorophenyl-phenylether	10.	U
86-73-7	Fluorene	10.	U
100-01-6	4-Nitroaniline	25.	U
534-52-1	4,6-Dinitro-2-methylphenol	25.	U
86-30-6	N-Nitrosodiphenylamine (1)	10.	U
101-55-3	4-Bromophenyl-phenylether	10.	U
118-74-1	Hexachlorobenzene	10.	U
87-86-5	Pentachlorophenol	25.	U
85-01-8	Phenanthrene	10.	U
120-12-7	Anthracene	10.	U
86-74-8	Carbazole	10.	U
84-74-2	Di-n-butylphthalate	10.	U
206-44-0	Fluoranthene	10.	U
129-00-0	Pyrene	10.	U
85-68-7	Butylbenzylphthalate	10.	U
91-94-1	3,3'-Dichlorobenzidine	10.	U
56-55-3	Benzo(a)anthracene	10.	U
218-01-9	Chrysene	10.	U
117-81-7	bis(2-Ethylhexyl)phthalate	10.	U
117-84-0	Di-n-octylphthalate	10.	U
205-99-2	Benzo(b)fluoranthene	10.	U
207-08-9	Benzo(k)fluoranthene	10.	U
50-32-8	Benzo(a)pyrene	10.	U
193-39-5	Indeno(1,2,3-cd)pyrene	10.	U
53-70-3	Dibenz(a,h)anthracene	10.	U
191-24-2	Benzo(g,h,i)perylene	10.	U

(1) - Cannot be separated from diphenylamine

1F

SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

EPA SAMPLE NO.

499__

Lab Name: ICM, Inc. Contract: A60084

Lab Code: ICM Case No.: SAS No.: SDG No.: 498__

Matrix: (soil/water) WATER Lab Sample ID: 190940

Sample wt/vol: 1000.0 (g/mL) ML Lab File ID: I2109

Level: (low/med) LOW Date Received: 06/24/94

% Moisture: _____ decanted: (Y/N)___ Date Extracted: 06/29/94

Concentrated Extract Volume: 1000.0 (uL) Date Analyzed: 07/20/94

Injection Volume: 2.0 (uL) Dilution Factor: 1.0

GPC Cleanup: (Y/N) N pH: ____

Number TICs found: 10 CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L

	CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
1.	127-18-4	TETRACHLORO-ETHENE	3.06	5.	J
2.	- -	UNKNOWN	9.81	3.	J
3.	- -	UNKNOWN	10.50	2.	J
4.	- -	UNKNOWN	11.24	2.	BJ
5.	65-85-0	BENZOIC ACID	11.47	10.	J
6.	- -	UNKNOWN	12.50	6.	J
7.	- -	UNKNOWN	12.89	20.	BJ
8.	- -	UNKNOWN	12.95	4.	J
9.	143-07-7	DODECANOIC ACID	16.53	8.	J
10.	134-62-3	DIETHYL METHYL BENZAMIDE	16.65	4.	J
11.					
12.					
13.					
14.					
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1D

PESTICIDE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

499

Lab Name: ICM, Inc. Contract: A60084

Lab Code: ICM Case No.: SAS No.: SDG No.: 498

Matrix: (soil/water) WATER Lab Sample ID: 190940

Sample wt/vol: 1050.0 (g/mL) ML Lab File ID: 01250

% Moisture: _____ decanted: (Y/N) ___ Date Received: 06/24/94

Extraction: (SepF/Cont/Sonc) SEPF Date Extracted: 06/29/94

Concentrated Extract Volume: 10000.0 (uL) Date Analyzed: 07/19/94

Injection Volume: 1.0 (uL) Dilution Factor: 1.0

GPC Cleanup: (Y/N) N pH: 6.8 Sulfur Cleanup: (Y/N) N

CONCENTRATION UNITS:
(ug/L or ug/Kg) UG/L

CAS NO.	COMPOUND		
319-84-6	alpha-BHC	.048	U
319-85-7	beta-BHC	.048	U
319-86-8	delta-BHC	.048	U
58-89-9	gamma-BHC (Lindane)	.048	U
76-44-8	Heptachlor	.048	U
309-00-2	Aldrin	.048	U
1024-57-3	Heptachlor epoxide	.048	U
959-98-8	Endosulfan I	.048	U
60-57-1	Dieldrin	.095	U
72-55-9	4,4'-DDE	.095	U
72-20-8	Endrin	.095	U
33213-65-9	Endosulfan II	.095	U
72-54-8	4,4'-DDD	.095	U
1031-07-8	Endosulfan Sulfate	.095	U
50-29-3	4,4'-DDT	.095	U
72-43-5	Methoxychlor	.48	U
53494-70-5	Endrin Ketone	.095	U
7421-93-4	Endrin aldehyde	.095	U
5103-71-9	alpha-Chlordane	.048	U
5103-74-2	gamma-Chlordane	.048	U
8001-35-2	Toxaphene	4.8	U
12674-11-2	Aroclor-1016	.95	U
11104-28-2	Aroclor-1221	1.9	U
11141-16-5	Aroclor-1232	.95	U
53469-21-9	Aroclor-1242	.95	U
12672-29-6	Aroclor-1248	.95	U
11097-69-1	Aroclor-1254	.95	U
11096-82-5	Aroclor-1260	.95	U

1

INORGANIC ANALYSES DATA SHEET

EPA SAMPLE NO.

499

Name: ICM_____ Contract: A60084____

Code: _____ Case No.: _____ SAS No.: _____ SDG No.: 498___

Matrix (soil/water): WATER Lab Sample ID: 190940____

Level (low/med): LOW__ Date Received: 06/24/94

% Solids: __0.0

Concentration Units (ug/L or mg/kg dry weight): UG/L_

CAS No.	Analyte	Concentration	C	Q	M
7429-90-5	Aluminum	114000			P
7440-36-0	Antimony	29.8	U		P
7440-38-2	Arsenic	5.6	B	W	F
7440-39-3	Barium	801			P
7440-41-7	Beryllium	7.3			P
7440-43-9	Cadmium	1.9	U		P
7440-70-2	Calcium	138000			P
7440-47-3	Chromium	208			P
7440-48-4	Cobalt	92.9			P
7440-50-8	Copper	312			P
7439-89-6	Iron	215000			P
7439-92-1	Lead	115			F
7439-95-4	Magnesium	75600			P
7439-96-5	Manganese	6110			P
7439-97-6	Mercury	0.10	U		CV
7440-02-0	Nickel	961			P
7440-09-7	Potassium	14900			P
7782-49-2	Selenium	8.5		S	F
7440-22-4	Silver	2.7	U		P
7440-23-5	Sodium	108000			P
7440-28-0	Thallium	3.1	B	W	F
7440-62-2	Vanadium	361			P
7440-66-6	Zinc	745			P
	Cyanide	10.0	U		AS

Color Before: LT_BROWN_ Clarity Before: CLOUDY Texture: _____

Color After: COLORLESS Clarity After: CLEAR_ Artifacts: _____

Comments:

SEE_CASE_NARRATIVE_FOR_CYANIDE_COLOR/CLARITY_INFORMATION._____

SAMPLE_CONTAINS_SOME_SEDIMENT._____

FORM I - IN ILM03.0

ATTACHMENT K16

1A
VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.
501__

Lab Name: ICM, Inc. Contract: A60084

Lab Code: ICM Case No.: SAS No.: SDG No.: 498__

Matrix: (soil/water) WATER Lab Sample ID:

Sample wt/vol: 5.000 (g/mL) ML Lab File ID: C0836

Level: (low/med) LOW Date Received: 06/24/94

% Moisture: not dec._____ Date Analyzed: 07/03/94

GC Column: SP1000 ID: 2.00 (mm) Dilution Factor: 1.0

Soil Extract Volume: _____ (uL) Soil Aliquot Volume: _____ (uL)

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L	Q
74-87-3	Chloromethane	10.	U
74-83-9	Bromomethane	10.	U
75-01-4	Vinyl Chloride	120.	
75-00-3	Chloroethane	6.	J
75-09-2	Methylene Chloride	10.	U
67-64-1	Acetone	10.	U
75-15-0	Carbon Disulfide	10.	U
75-35-4	1,1-Dichloroethene	2.	J
75-34-3	1,1-Dichloroethane	10.	U
540-59-0	1,2-Dichloroethene (total)	820.	E
67-66-3	Chloroform	10.	U
107-06-2	1,2-Dichloroethane	10.	U
78-93-3	2-Butanone	10.	U
71-55-6	1,1,1-Trichloroethane	10.	U
56-23-5	Carbon Tetrachloride	10.	U
75-27-4	Bromodichloromethane	10.	U
78-87-5	1,2-Dichloropropane	10.	U
10061-01-5	cis-1,3-Dichloropropene	10.	U
79-01-6	Trichloroethene	430.	E
124-48-1	Dibromochloromethane	10.	U
79-00-5	1,1,2-Trichloroethane	10.	U
71-43-2	Benzene	10.	U
10061-02-6	trans-1,3-Dichloropropene	10.	U
75-25-2	Bromoform	10.	U
108-10-1	4-Methyl-2-Pentanone	10.	U
591-78-6	2-Hexanone	10.	U
127-18-4	Tetrachloroethene	1700.	E
79-34-5	1,1,2,2-Tetrachloroethane	10.	U
108-88-3	Toluene	10.	U
108-90-7	Chlorobenzene	10.	U
100-41-4	Ethylbenzene	10.	U
100-42-5	Styrene	10.	U
1330-20-7	Xylene (total)	10.	U

1E

VOLATILE ORGANICS ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

EPA SAMPLE NO.: 501__

Lab Name: ICM, Inc. Contract: A60084

Lab Code: ICM Case No.: SAS No.: SDG No.: 498__

Matrix: (soil/water) WATER Lab Sample ID:

Sample wt/vol: 5.000 (g/mL) ML Lab File ID: C0836

Level: (low/med) LOW Date Received: 06/24/94

% Moisture: not dec._____ Date Analyzed: 07/03/94

GC Column: SP1000 ID: 2.00 (mm) Dilution Factor: 1.0

Soil Extract Volume: _____ (uL) Soil Aliquot Volume: _____ (uL)

Number TICs found: 0 CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L

	CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
1.					
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1A

VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

501__ DL

b Name: ICM, Inc. Contract: A60084

ab Code: ICM Case No.: SAS No.: SDG No.: 498__

atrix: (soil/water) WATER Lab Sample ID:

mple wt/vol: .250 (g/mL) ML Lab File ID: C0844

evel: (low/med) LOW Date Received: 06/24/94

Moisture: not dec._____ Date Analyzed: 07/03/94

C Column: SP1000 ID: 2.00 (mm) Dilution Factor: 20.0

l Extract Volume: _____ (uL) Soil Aliquot Volume: _____ (uL)

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L	Q
74-87-3	Chloromethane	200.	U
74-83-9	Bromomethane	200.	U
75-01-4	Vinyl Chloride	200.	U
75-00-3	Chloroethane	200.	U
75-09-2	Methylene Chloride	200.	U
67-64-1	Acetone	200.	U
75-15-0	Carbon Disulfide	200.	U
75-35-4	1,1-Dichloroethene	200.	U
75-34-3	1,1-Dichloroethane	200.	U
540-59-0	1,2-Dichloroethene (total)	730.	D
67-66-3	Chloroform	200.	U
107-06-2	1,2-Dichloroethane	200.	U
78-93-3	2-Butanone	200.	U
71-55-6	1,1,1-Trichloroethane	200.	U
56-23-5	Carbon Tetrachloride	200.	U
75-27-4	Bromodichloromethane	200.	U
78-87-5	1,2-Dichloropropane	200.	U
10061-01-5	cis-1,3-Dichloropropene	200.	U
79-01-6	Trichloroethene	390.	D
124-48-1	Dibromochloromethane	200.	U
79-00-5	1,1,2-Trichloroethane	200.	U
71-43-2	Benzene	200.	U
10061-02-6	trans-1,3-Dichloropropene	200.	U
75-25-2	Bromoform	200.	U
108-10-1	4-Methyl-2-Pentanone	200.	U
591-78-6	2-Hexanone	200.	U
127-18-4	Tetrachloroethene	2600.	D
79-34-5	1,1,2,2-Tetrachloroethane	200.	U
108-88-3	Toluene	200.	U
108-90-7	Chlorobenzene	200.	U
100-41-4	Ethylbenzene	200.	U
100-42-5	Styrene	200.	U
1330-20-7	Xylene (total)	200.	U

VOLATILE ORGANICS ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

501__ DL

Lab Name: ICM, Inc. Contract: A60084

Lab Code: ICM Case No.: SAS No.: SDG No.: 498__

Matrix: (soil/water) WATER Lab Sample ID:

Sample wt/vol: .250 (g/mL) ML Lab File ID: C0844

Level: (low/med) LOW Date Received: 06/24/94

% Moisture: not dec._____ Date Analyzed: 07/03/94

GC Column: SP1000 ID: 2.00 (mm) Dilution Factor: 20.0

Soil Extract Volume: _____ (uL) Soil Aliquot Volume: _____ (uL)

Number TICs found: 0 CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L

	CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
1.					
2.					
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1B

SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

501__

b Name: ICM, Inc. Contract: A60084

Code: ICM Case No.: SAS No.: SDG No.: 498__

trix: (soil/water) WATER Lab Sample ID: 190941

ple wt/vol: 1000.0 (g/mL) ML Lab File ID: I2110

el: (low/med) LOW Date Received: 06/24/94

Moisture: _____ decanted: (Y/N)___ Date Extracted: 06/29/94

centrated Extract Volume: 1000.0 (uL) Date Analyzed: 07/20/94

jection Volume: 2.0 (uL) Dilution Factor: 1.0

Cleanup: (Y/N) N pH: ____

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L	Q
108-95-2	Phenol	10.	U
111-44-4	bis(2-Chloroethyl)ether	10.	U
95-57-8	2-Chlorophenol	10.	U
541-73-1	1,3-Dichlorobenzene	10.	U
106-46-7	1,4-Dichlorobenzene	10.	U
95-50-1	1,2-Dichlorobenzene	10.	U
95-48-7	2-Methylphenol	10.	U
108-60-1	2,2'-oxybis(1-Chloropropane)	10.	U
106-44-5	4-Methylphenol	10.	U
621-64-7	N-Nitroso-di-n-propylamine	10.	U
67-72-1	Hexachloroethane	10.	U
98-95-3	Nitrobenzene	10.	U
78-59-1	Isophorone	10.	U
88-75-5	2-Nitrophenol	10.	U
105-67-9	2,4-Dimethylphenol	10.	U
111-91-1	bis(2-Chloroethoxy)methane	10.	U
120-83-2	2,4-Dichlorophenol	10.	U
120-82-1	1,2,4-Trichlorobenzene	10.	U
91-20-3	Naphthalene	10.	U
106-47-8	4-Chloroaniline	10.	U
87-68-3	Hexachlorobutadiene	10.	U
59-50-7	4-Chloro-3-methylphenol	10.	U
91-57-6	2-Methylnaphthalene	10.	U
77-47-4	Hexachlorocyclopentadiene	10.	U
88-06-2	2,4,6-Trichlorophenol	10.	U
95-95-4	2,4,5-Trichlorophenol	25.	U
91-58-7	2-Chloronaphthalene	10.	U
88-74-4	2-Nitroaniline	25.	U
131-11-3	Dimethylphthalate	10.	U
208-96-8	Acenaphthylene	10.	U
606-20-2	2,6-Dinitrotoluene	10.	U
99-09-2	3-Nitroaniline	25.	U
83-32-9	Acenaphthene	10.	U

1C

SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

501__

ab Name: ICM, Inc. Contract: A60084

Code: ICM Case No.: SAS No.: SDG No.: 498__

atrix: (soil/water) WATER Lab Sample ID: 190941

ple wt/vol: 1000.0 (g/mL) ML Lab File ID: I2110

evel: (low/med) LOW Date Received: 06/24/94

oisture: _____ decanted: (Y/N)___ Date Extracted: 06/29/94

ncentrated Extract Volume: 1000.0 (uL) Date Analyzed: 07/20/94

jection Volume: 2.0 (uL) Dilution Factor: 1.0

Cleanup: (Y/N) N pH: ____

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L	Q
51-28-5	2,4-Dinitrophenol	25.	U
100-02-7	4-Nitrophenol	25.	U
132-64-9	Dibenzofuran	10.	U
121-14-2	2,4-Dinitrotoluene	10.	U
84-66-2	Diethylphthalate	10.	U
7005-72-3	4-Chlorophenyl-phenylether	10.	U
86-73-7	Fluorene	10.	U
100-01-6	4-Nitroaniline	25.	U
534-52-1	4,6-Dinitro-2-methylphenol	25.	U
86-30-6	N-Nitrosodiphenylamine (1)	10.	U
101-55-3	4-Bromophenyl-phenylether	10.	U
118-74-1	Hexachlorobenzene	10.	U
87-86-5	Pentachlorophenol	25.	U
85-01-8	Phenanthrene	10.	U
120-12-7	Anthracene	10.	U
86-74-8	Carbazole	10.	U
84-74-2	Di-n-butylphthalate	10.	U
206-44-0	Fluoranthene	10.	U
129-00-0	Pyrene	10.	U
85-68-7	Butylbenzylphthalate	10.	U
91-94-1	3,3'-Dichlorobenzidine	10.	U
56-55-3	Benzo(a)anthracene	10.	U
218-01-9	Chrysene	10.	U
117-81-7	bis(2-Ethylhexyl)phthalate	3.	J
117-84-0	Di-n-octylphthalate	10.	U
205-99-2	Benzo(b)fluoranthene	10.	U
207-08-9	Benzo(k)fluoranthene	10.	U
50-32-8	Benzo(a)pyrene	10.	U
193-39-5	Indeno(1,2,3-cd)pyrene	10.	U
53-70-3	Dibenz(a,h)anthracene	10.	U
191-24-2	Benzo(g,h,i)perylene	10.	U

(1) - Cannot be separated from diphenylamine

ATTACHMENT K22

1F

EPA SAMPLE NO.

501__

SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

Name: ICM, Inc. Contract: A60084

Code: ICM Case No.: SAS No.: SDG No.: 498__

rix: (soil/water) WATER Lab Sample ID: 190941

le wt/vol: 1000.0 (g/mL) ML Lab File ID: I2110

el: (low/med) LOW Date Received: 06/24/94

isture: _____ decanted: (Y/N)___ Date Extracted: 06/29/94

centrated Extract Volume: 1000.0 (uL) Date Analyzed: 07/20/94

ction Volume: 2.0 (uL) Dilution Factor: 1.0

Cleanup: (Y/N) N pH: ____

nber TICs found: 11 CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L

	CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
.	127-18-4	TETRACHLORO-ETHENE	3.11	400.	J
.	- -	UNKNOWN	12.72	4.	J
3.	- -	UNKNOWN	19.05	2.	J
4.	- -	UNKNOWN	21.70	7.	J
.	- -	UNKNOWN	21.81	10.	J
.	- -	UNKNOWN	24.09	7.	J
7.	- -	UNKNOWN	24.20	40.	J
.	- -	UNKNOWN	24.29	40.	J
.	- -	UNKNOWN	26.43	100.	J
.	- -	UNKNOWN	28.42	60.	J
1.	- -	UNKNOWN	30.57	20.	J
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PESTICIDE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.: 501

Lab Name: ICM, Inc. Contract: A60084

Lab Code: ICM Case No.: SAS No.: SDG No.: 498

Matrix: (soil/water) WATER Lab Sample ID: 190941

Sample wt/vol: 1030.0 (g/mL) ML Lab File ID: 01251

% Moisture: decanted: (Y/N) Date Received: 06/24/94

Extraction: (Sepf/Cont/Sonc) SEPF Date Extracted: 06/29/94

Concentrated Extract Volume: 10000.0 (uL) Date Analyzed: 07/19/94

Injection Volume: 1.0 (uL) Dilution Factor: 1.0

GPC Cleanup: (Y/N) N pH: 6.9 Sulfur Cleanup: (Y/N) N

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L	Q
319-84-6	alpha-BHC	.049	U
319-85-7	beta-BHC	.049	U
319-86-8	delta-BHC	.049	U
58-89-9	gamma-BHC (Lindane)	.049	U
76-44-8	Heptachlor	.049	U
309-00-2	Aldrin	.049	U
1024-57-3	Heptachlor epoxide	.049	U
959-98-8	Endosulfan I	.049	U
60-57-1	Dieldrin	.097	U
72-55-9	4,4'-DDE	.097	U
72-20-8	Endrin	.097	U
33213-65-9	Endosulfan II	.097	U
72-54-8	4,4'-DDD	.097	U
1031-07-8	Endosulfan Sulfate	.097	U
50-29-3	4,4'-DDT	.097	U
72-43-5	Methoxychlor	.49	U
53494-70-5	Endrin ketone	.097	U
7421-93-4	Endrin aldehyde	.097	U
5103-71-9	alpha-Chlordane	.049	U
5103-74-2	gamma-Chlordane	.049	U
8001-35-2	Toxaphene	4.9	U
12674-11-2	Aroclor-1016	.97	U
11104-28-2	Aroclor-1221	1.9	U
11141-16-5	Aroclor-1232	.97	U
53469-21-9	Aroclor-1242	.97	U
12672-29-6	Aroclor-1248	.97	U
11097-69-1	Aroclor-1254	.97	U
11096-82-5	Aroclor-1260	.97	U

ATTACHMENT K24

U.S. EPA - CLP

1

INORGANIC ANALYSES DATA SHEET

EPA SAMPLE NO.

501

Name: ICM Contract: A60084

Code: Case No.: SAS No.: SDG No.: 498

rix (soil/water): WATER Lab Sample ID: 190941

el (low/med): LOW Date Received: 06/24/94

olids: 0.0

Concentration Units (ug/L or mg/kg dry weight): UG/L

CAS No.	Analyte	Concentration	C	Q	M
7429-90-5	Aluminum	724			P
7440-36-0	Antimony	29.8	U		P
7440-38-2	Arsenic	1.6	U		F
7440-39-3	Barium	181	B		P
7440-41-7	Beryllium	0.30	U		P
7440-43-9	Cadmium	2.5	B		P
7440-70-2	Calcium	94100			P
7440-47-3	Chromium	2.8	U		P
7440-48-4	Cobalt	4.6	U		P
7440-50-8	Copper	4.5	B		P
7439-89-6	Iron	2190			P
7439-92-1	Lead	1.8	B		F
7439-95-4	Magnesium	33400			P
7439-96-5	Manganese	724			P
7439-97-6	Mercury	0.10	U		CV
7440-02-0	Nickel	8.1	U		P
7440-09-7	Potassium	11600			P
7782-49-2	Selenium	1.4	U		F
7440-22-4	Silver	2.7	U		P
7440-23-5	Sodium	50600			P
7440-28-0	Thallium	1.6	U		F
7440-62-2	Vanadium	4.9	B		P
7440-66-6	Zinc	37.0			P
	Cyanide	10.0	U		AS

or Before: COLORLESS Clarity Before: CLEAR Texture:

or After: COLORLESS Clarity After: CLEAR Artifacts:

ents:
EE CASE NARRATIVE FOR CYANIDE COLOR/CLARITY INFORMATION.
SAMPLE CONTAINS SOME SEDIMENT.

FORM I - IN

ILMO3.0

ATTACHMENT K25

1A

VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

502__

Lab Name: ICM, Inc. Contract: A60084

Lab Code: ICM Case No.: SAS No.: SDG No.: 498__

Matrix: (soil/water) WATER Lab Sample ID:

Sample wt/vol: 5.000 (g/mL) ML Lab File ID: C0839

Level: (low/med) LOW Date Received: 06/24/94

% Moisture: not dec._____ Date Analyzed: 07/03/94

GC Column: SP1000 ID: 2.00 (mm) Dilution Factor: 1.0

Soil Extract Volume: _____ (uL) Soil Aliquot Volume: _____ (uL)

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L	Q
74-87-3	Chloromethane	10.	U
74-83-9	Bromomethane	10.	U
75-01-4	Vinyl Chloride	120.	
75-00-3	Chloroethane	7.	J
75-09-2	Methylene Chloride	10.	U
67-64-1	Acetone	10.	U
75-15-0	Carbon Disulfide	10.	U
75-35-4	1,1-Dichloroethene	2.	J
75-34-3	1,1-Dichloroethane	10.	U
540-59-0	1,2-Dichloroethene (total)	800.	E
67-66-3	Chloroform	1.	J
107-06-2	1,2-Dichloroethane	10.	U
78-93-3	2-Butanone	10.	U
71-55-6	1,1,1-Trichloroethane	10.	U
56-23-5	Carbon Tetrachloride	10.	U
75-27-4	Bromodichloromethane	10.	U
78-87-5	1,2-Dichloropropane	2.	J
10061-01-5	cis-1,3-Dichloropropene	10.	U
79-01-6	Trichloroethene	430.	E
124-48-1	Dibromochloromethane	10.	U
79-00-5	1,1,2-Trichloroethane	10.	U
71-43-2	Benzene	10.	U
10061-02-6	trans-1,3-Dichloropropene	10.	U
75-25-2	Bromoform	10.	U
108-10-1	4-Methyl-2-Pentanone	10.	U
591-78-6	2-Hexanone	10.	U
127-18-4	Tetrachloroethene	1700.	E
79-34-5	1,1,2,2-Tetrachloroethane	10.	U
108-88-3	Toluene	10.	U
108-90-7	Chlorobenzene	10.	U
100-41-4	Ethylbenzene	10.	U
100-42-5	Styrene	10.	U
1330-20-7	Xylene (total)	10.	U

VOLATILE ORGANICS ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

EPA SAMPLE NO.

502__

ab Name: ICM, Inc. Contract: A60084

ab Code: ICM Case No.: SAS No.: SDG No.: 498__

atrix: (soil/water) WATER Lab Sample ID:

ample wt/vol: 5.000 (g/mL) ML Lab File ID: C0839

evel: (low/med) LOW Date Received: 06/24/94

Moisture: not dec._____ Date Analyzed: 07/03/94

Column: SP1000 ID: 2.00 (mm) Dilution Factor: 1.0

il Extract Volume: _____ (uL) Soil Aliquot Volume: _____ (uL)

Number TICs found: 0 CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L

	CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
1.					
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1A

VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

502__ DL

Name: ICM, Inc. Contract: A60084

Code: ICM Case No.: SAS No.: SDG No.: 498__

trix: (soil/water) WATER Lab Sample ID:

ple wt/vol: .250 (g/mL) ML Lab File ID: C0843

vel: (low/med) LOW Date Received: 06/24/94

oisture: not dec._____ Date Analyzed: 07/03/94

Column: SP1000 ID: 2.00 (mm) Dilution Factor: 20.0

il Extract Volume: _____ (uL) Soil Aliquot Volume: _____ (uL)

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L	Q
74-87-3	Chloromethane	200.	U
74-83-9	Bromomethane	200.	U
75-01-4	Vinyl Chloride	200.	U
75-00-3	Chloroethane	200.	U
75-09-2	Methylene Chloride	200.	U
67-64-1	Acetone	200.	U
75-15-0	Carbon Disulfide	200.	U
75-35-4	1,1-Dichloroethene	200.	U
75-34-3	1,1-Dichloroethane	200.	U
540-59-0	1,2-Dichloroethene (total)	820.	D
67-66-3	Chloroform	200.	U
107-06-2	1,2-Dichloroethane	200.	U
78-93-3	2-Butanone	200.	U
71-55-6	1,1,1-Trichloroethane	200.	U
56-23-5	Carbon Tetrachloride	200.	U
75-27-4	Bromodichloromethane	200.	U
78-87-5	1,2-Dichloropropane	200.	U
10061-01-5	cis-1,3-Dichloropropene	200.	U
79-01-6	Trichloroethene	420.	D
124-48-1	Dibromochloromethane	200.	U
79-00-5	1,1,2-Trichloroethane	200.	U
71-43-2	Benzene	200.	U
10061-02-6	trans-1,3-Dichloropropene	200.	U
75-25-2	Bromoform	200.	U
108-10-1	4-Methyl-2-Pentanone	200.	U
591-78-6	2-Hexanone	200.	U
127-18-4	Tetrachloroethene	3000.	D
79-34-5	1,1,2,2-Tetrachloroethane	200.	U
108-88-3	Toluene	200.	U
108-90-7	Chlorobenzene	200.	U
100-41-4	Ethylbenzene	200.	U
100-42-5	Styrene	200.	U
1330-20-7	Xylene (total)	200.	U

1E

VOLATILE ORGANICS ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

EPA SAMPLE NO.

502__ DL

Lab Name: ICM, Inc. Contract: A60084

Lab Code: ICM Case No.: SAS No.: SDG No.: 498__

Matrix: (soil/water) WATER Lab Sample ID:

Sample wt/vol: .250 (g/mL) ML Lab File ID: C0843

Level: (low/med) LOW Date Received: 06/24/94

% Moisture: not dec._____ Date Analyzed: 07/03/94

GC Column: SP1000 ID: 2.00 (mm) Dilution Factor: 20.0

Soil Extract Volume: _____ (uL) Soil Aliquot Volume: _____ (uL)

Number TICs found: 0 CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L

	CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
1.					
2.					
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ATTACHMENT K29

1B

SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

502__

Name: ICM, Inc. Contract: A60084

Code: ICM Case No.: SAS No.: SDG No.: 498__

ix: (soil/water) WATER Lab Sample ID: 190942

ple wt/vol: 1030.0 (g/mL) ML Lab File ID: I2119

el: (low/med) LOW Date Received: 06/24/94

oisture: _____ decanted: (Y/N)___ Date Extracted: 06/29/94

entrated Extract Volume: 1000.0 (uL) Date Analyzed: 07/21/94

ection Volume: 2.0 (uL) Dilution Factor: 1.0

Cleanup: (Y/N) N pH: ____

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L	Q
108-95-2	Phenol	10.	U
111-44-4	bis(2-Chloroethyl)ether	10.	U
95-57-8	2-Chlorophenol	10.	U
541-73-1	1,3-Dichlorobenzene	10.	U
106-46-7	1,4-Dichlorobenzene	10.	U
95-50-1	1,2-Dichlorobenzene	10.	U
95-48-7	2-Methylphenol	10.	U
108-60-1	2,2'-oxybis(1-Chloropropane)	10.	U
106-44-5	4-Methylphenol	10.	U
621-64-7	N-Nitroso-di-n-propylamine	10.	U
67-72-1	Hexachloroethane	10.	U
98-95-3	Nitrobenzene	10.	U
78-59-1	Isophorone	10.	U
88-75-5	2-Nitrophenol	10.	U
105-67-9	2,4-Dimethylphenol	10.	U
111-91-1	bis(2-Chloroethoxy)methane	10.	U
120-83-2	2,4-Dichlorophenol	10.	U
120-82-1	1,2,4-Trichlorobenzene	10.	U
91-20-3	Naphthalene	10.	U
106-47-8	4-Chloroaniline	10.	U
87-68-3	Hexachlorobutadiene	10.	U
59-50-7	4-Chloro-3-methylphenol	10.	U
91-57-6	2-Methylnaphthalene	10.	U
77-47-4	Hexachlorocyclopentadiene	10.	U
88-06-2	2,4,6-Trichlorophenol	10.	U
95-95-4	2,4,5-Trichlorophenol	24.	U
91-58-7	2-Chloronaphthalene	10.	U
88-74-4	2-Nitroaniline	24.	U
131-11-3	Dimethylphthalate	10.	U
208-96-8	Acenaphthylene	10.	U
606-20-2	2,6-Dinitrotoluene	10.	U
99-09-2	3-Nitroaniline	24.	U
83-32-9	Acenaphthene	10.	U

1C

SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

502__

Lab Name: ICM, Inc. Contract: A60084

Lab Code: ICM Case No.: SAS No.: SDG No.: 498__

Matrix: (soil/water) WATER Lab Sample ID: 190942

Sample wt/vol: 1030.0 (g/mL) ML Lab File ID: I2119

Level: (low/med) LOW Date Received: 06/24/94

% Moisture: _____ decanted: (Y/N)___ Date Extracted: 06/29/94

Concentrated Extract Volume: 1000.0 (uL) Date Analyzed: 07/21/94

Injection Volume: 2.0 (uL) Dilution Factor: 1.0

GPC Cleanup: (Y/N) N pH: ____

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L	Q
51-28-5	2,4-Dinitrophenol	24.	U
100-02-7	4-Nitrophenol	24.	U
132-64-9	Dibenzofuran	10.	U
121-14-2	2,4-Dinitrotoluene	10.	U
84-66-2	Diethylphthalate	10.	U
7005-72-3	4-Chlorophenyl-phenylether	10.	U
86-73-7	Fluorene	10.	U
100-01-6	4-Nitroaniline	24.	U
534-52-1	4,6-Dinitro-2-methylphenol	24.	U
86-30-6	N-Nitrosodiphenylamine (1)	10.	U
101-55-3	4-Bromophenyl-phenylether	10.	U
118-74-1	Hexachlorobenzene	10.	U
87-86-5	Pentachlorophenol	24.	U
85-01-8	Phenanthrene	10.	U
120-12-7	Anthracene	10.	U
86-74-8	Carbazole	10.	U
84-74-2	Di-n-butylphthalate	10.	U
206-44-0	Fluoranthene	10.	U
129-00-0	Pyrene	10.	U
85-68-7	Butylbenzylphthalate	10.	U
91-94-1	3,3'-Dichlorobenzidine	10.	U
56-55-3	Benzo(a)anthracene	10.	U
218-01-9	Chrysene	10.	U
117-81-7	bis(2-Ethylhexyl)phthalate	3.	J
117-84-0	Di-n-octylphthalate	10.	U
205-99-2	Benzo(b)fluoranthene	10.	U
207-08-9	Benzo(k)fluoranthene	10.	U
50-32-8	Benzo(a)pyrene	10.	U
193-39-5	Indeno(1,2,3-cd)pyrene	10.	U
53-70-3	Dibenz(a,h)anthracene	10.	U
191-24-2	Benzo(g,h,i)perylene	10.	U

(1) - Cannot be separated from diphenylamine

1F

EPA SAMPLE NO.

SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

502__

Name: ICM, Inc. Contract: A60084

Code: ICM Case No.: SAS No.: SDG No.: 498__

trix: (soil/water) WATER Lab Sample ID: 190942

ple wt/vol: 1030.0 (g/mL) ML Lab File ID: I2119

vel: (low/med) LOW Date Received: 06/24/94

oisture: _____ decanted: (Y/N)___ Date Extracted: 06/29/94

ncentrated Extract Volume: 1000.0 (uL) Date Analyzed: 07/21/94

ection Volume: 2.0 (uL) Dilution Factor: 1.0

Cleanup: (Y/N) N pH: _____

umber TICs found: 16 CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L

	CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
1.	127-18-4	TETRACHLORO-ETHENE	3.06	500.	J
2.	95-16-9	BENZOTHIAZOLE	11.70	2.	J
3.	- -	UNKNOWN	12.38	2.	J
4.	- -	UNKNOWN	12.67	2.	J
5.	- -	UNKNOWN	13.67	3.	J
6.	- -	UNKNOWN	16.31	2.	J
7.	- -	UNKNOWN	19.03	2.	J
8.	- -	UNKNOWN	21.67	7.	J
9.	- -	UNKNOWN	21.79	10.	J
10.	- -	UNKNOWN	24.07	5.	J
11.	- -	UNKNOWN	24.17	30.	J
12.	- -	UNKNOWN	24.26	30.	J
13.	- -	UNKNOWN	26.42	80.	J
14.	- -	UNKNOWN	28.40	100.	J
15.	- -	UNKNOWN	30.53	70.	J
16.	- -	UNKNOWN	32.75	20.	J
17.					
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PESTICIDE ORGANICS ANALYSIS DATA SHEET

502

Lab Name: ICM, Inc. Contract: A60084

Lab Code: ICM Case No.: SAS No.: SDG No.: 498

Matrix: (soil/water) WATER Lab Sample ID: 190942

Sample wt/vol: 1020.0 (g/mL) ML Lab File ID: 01252

% Moisture: ____ decanted: (Y/N) ___ Date Received: 06/24/94

Extraction: (SepF/Cont/Sonc) SEPF Date Extracted: 06/29/94

Concentrated Extract Volume: 10000.0 (uL) Date Analyzed: 07/19/94

Injection Volume: 1.0 (uL) Dilution Factor: 1.0

GPC Cleanup: (Y/N) N pH: 6.9 Sulfur Cleanup: (Y/N) N

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L	Q
319-84-6	alpha-BHC	.049	U
319-85-7	beta-BHC	.049	U
319-86-8	delta-BHC	.049	U
58-89-9	gamma-BHC (Lindane)	.049	U
76-44-8	Heptachlor	.049	U
309-00-2	Aldrin	.049	U
1024-57-3	Heptachlor epoxide	.049	U
959-98-8	Endosulfan I	.049	U
60-57-1	Dieldrin	.098	U
72-55-9	4,4'-DDE	.098	U
72-20-8	Endrin	.098	U
33213-65-9	Endosulfan II	.098	U
72-54-8	4,4'-DDD	.098	U
1031-07-8	Endosulfan Sulfate	.098	U
50-29-3	4,4'-DDT	.098	U
72-43-5	Methoxychlor	.49	U
53494-70-5	Endrin ketone	.098	U
7421-93-4	Endrin aldehyde	.098	U
5103-71-9	alpha-Chlordane	.049	U
5103-74-2	gamma-Chlordane	.049	U
8001-35-2	Toxaphene	4.9	U
12674-11-2	Aroclor-1016	.98	U
11104-28-2	Aroclor-1221	2.0	U
11141-16-5	Aroclor-1232	.98	U
53469-21-9	Aroclor-1242	.98	U
12672-29-6	Aroclor-1248	.98	U
11097-69-1	Aroclor-1254	.98	U
11096-82-5	Aroclor-1260	.98	U

FORM I PEST 3/90

ATTACHMENT K33

U.S. EPA - CLP

1

INORGANIC ANALYSES DATA SHEET

EPA SAMPLE NO.

502

Name: ICM_____ Contract: A60084____

Code: _____ Case No.: _____ SAS No.: _____ SDG No.: 498___

ix (soil/water): WATER Lab Sample ID: 190942____

el (low/med): LOW__ Date Received: 06/24/94

lids: __0.0

Concentration Units (ug/L or mg/kg dry weight): UG/L_

CAS No.	Analyte	Concentration	C	Q	M
7429-90-5	Aluminum	715			P
7440-36-0	Antimony	29.8	U		P
7440-38-2	Arsenic	1.6	U		F
7440-39-3	Barium	179	B		P
7440-41-7	Beryllium	0.30	U		P
7440-43-9	Cadmium	1.9	U		P
7440-70-2	Calcium	93300			P
7440-47-3	Chromium	2.8	U		P
7440-48-4	Cobalt	4.6	U		P
7440-50-8	Copper	5.2	B		P
7439-89-6	Iron	2280			P
7439-92-1	Lead	1.0	B		F
7439-95-4	Magnesium	33200			P
7439-96-5	Manganese	717			P
7439-97-6	Mercury	0.10	U		CV
7440-02-0	Nickel	8.1	U		P
7440-09-7	Potassium	12000			P
7782-49-2	Selenium	2.1	B	W	F
7440-22-4	Silver	2.7	U		P
7440-23-5	Sodium	50500			P
7440-28-0	Thallium	1.6	U	W	F
7440-62-2	Vanadium	5.3	B		P
7440-66-6	Zinc	29.1			P
	Cyanide	10.0	U		AS

r Before: COLORLESS Clarity Before: CLEAR_ Texture: _____

or After: COLORLESS Clarity After: CLEAR_ Artifacts: _____

ents:
EE_CASE_NARRATIVE_FOR_CYANIDE_COLOR/CLARITY_INFORMATION._____
SAMPLE_CONTAINS_SOME_SEDIMENT._____

FORM I - IN

ILM03.0

ATTACHMENT K34

1A

VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

503__

Name: ICM, Inc. Contract: A60084

Code: ICM Case No.: SAS No.: SDG No.: 498__

Matrix: (soil/water) WATER Lab Sample ID:

Sample wt/vol: 5.000 (g/mL) ML Lab File ID: C0835

Level: (low/med) LOW Date Received: 06/24/94

% Moisture: not dec._____ Date Analyzed: 07/03/94

GC Column: SP1000 ID: 2.00 (mm) Dilution Factor: 1.0

Soil Extract Volume: _____ (uL) Soil Aliquot Volume: _____ (uL)

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L	Q
74-87-3	Chloromethane	10.	U
74-83-9	Bromomethane	10.	U
75-01-4	Vinyl Chloride	10.	U
75-00-3	Chloroethane	10.	U
75-09-2	Methylene Chloride	10.	U
67-64-1	Acetone	10.	U
75-15-0	Carbon Disulfide	10.	U
75-35-4	1,1-Dichloroethene	10.	U
75-34-3	1,1-Dichloroethane	10.	U
540-59-0	1,2-Dichloroethene (total)	10.	U
67-66-3	Chloroform	10.	U
107-06-2	1,2-Dichloroethane	10.	U
78-93-3	2-Butanone	10.	U
71-55-6	1,1,1-Trichloroethane	10.	U
56-23-5	Carbon Tetrachloride	10.	U
75-27-4	Bromodichloromethane	10.	U
78-87-5	1,2-Dichloropropane	10.	U
10061-01-5	cis-1,3-Dichloropropene	10.	U
79-01-6	Trichloroethene	10.	U
124-48-1	Dibromochloromethane	10.	U
79-00-5	1,1,2-Trichloroethane	10.	U
71-43-2	Benzene	10.	U
10061-02-6	trans-1,3-Dichloropropene	10.	U
75-25-2	Bromoform	10.	U
108-10-1	4-Methyl-2-Pentanone	10.	U
591-78-6	2-Hexanone	10.	U
127-18-4	Tetrachloroethene	10.	U
79-34-5	1,1,2,2-Tetrachloroethane	10.	U
108-88-3	Toluene	10.	U
108-90-7	Chlorobenzene	10.	U
100-41-4	Ethylbenzene	10.	U
100-42-5	Styrene	10.	U
1330-20-7	Xylene (total)	10.	U

1E

VOLATILE ORGANICS ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

EPA SAMPLE NO.

503__

Lab Name: ICM, Inc. Contract: A60084

Lab Code: ICM Case No.: SAS No.: SDG No.: 498__

Matrix: (soil/water) WATER Lab Sample ID:

Sample wt/vol: 5.000 (g/mL) ML Lab File ID: C0835

Level: (low/med) LOW Date Received: 06/24/94

% Moisture: not dec._____ Date Analyzed: 07/03/94

GC Column: SP1000 ID: 2.00 (mm) Dilution Factor: 1.0

Soil Extract Volume: _____ (uL) Soil Aliquot Volume: _____ (uL)

Number TICs found: 0 CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L

	CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
1.					
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1B

SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

503__

Name: ICM, Inc. Contract: A60084

Code: ICM Case No.: SAS No.: SDG No.: 498__

rix: (soil/water) WATER Lab Sample ID: 190943

ple wt/vol: 1000.0 (g/mL) ML Lab File ID: I2120

l: (low/med) LOW Date Received: 06/24/94

oisture: _____ decanted: (Y/N)___ Date Extracted: 06/29/94

entrated Extract Volume: 1000.0 (uL) Date Analyzed: 07/21/94

ection Volume: 2.0 (uL) Dilution Factor: 1.0

Cleanup: (Y/N) N pH: ____

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L	Q
108-95-2	Phenol	10.	U
111-44-4	bis(2-Chloroethyl)ether	10.	U
95-57-8	2-Chlorophenol	10.	U
541-73-1	1,3-Dichlorobenzene	10.	U
106-46-7	1,4-Dichlorobenzene	10.	U
95-50-1	1,2-Dichlorobenzene	10.	U
95-48-7	2-Methylphenol	10.	U
108-60-1	2,2'-oxybis(1-Chloropropane)	10.	U
106-44-5	4-Methylphenol	10.	U
621-64-7	N-Nitroso-di-n-propylamine	10.	U
67-72-1	Hexachloroethane	10.	U
98-95-3	Nitrobenzene	10.	U
78-59-1	Isophorone	10.	U
88-75-5	2-Nitrophenol	10.	U
105-67-9	2,4-Dimethylphenol	10.	U
111-91-1	bis(2-Chloroethoxy)methane	10.	U
120-83-2	2,4-Dichlorophenol	10.	U
120-82-1	1,2,4-Trichlorobenzene	10.	U
91-20-3	Naphthalene	10.	U
106-47-8	4-Chloroaniline	10.	U
87-68-3	Hexachlorobutadiene	10.	U
59-50-7	4-Chloro-3-methylphenol	10.	U
91-57-6	2-Methylnaphthalene	10.	U
77-47-4	Hexachlorocyclopentadiene	10.	U
88-06-2	2,4,6-Trichlorophenol	10.	U
95-95-4	2,4,5-Trichlorophenol	25.	U
91-58-7	2-Chloronaphthalene	10.	U
88-74-4	2-Nitroaniline	25.	U
131-11-3	Dimethylphthalate	10.	U
208-96-8	Acenaphthylene	10.	U
606-20-2	2,6-Dinitrotoluene	10.	U
99-09-2	3-Nitroaniline	25.	U
83-32-9	Acenaphthene	10.	U

1C

SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

503__

b Name: ICM, Inc. Contract: A60084

Code: ICM Case No.: SAS No.: SDG No.: 498__

trix: (soil/water) WATER Lab Sample ID: 190943

ple wt/vol: 1000.0 (g/mL) ML Lab File ID: I2120

vel: (low/med) LOW Date Received: 06/24/94

isture: _____ decanted: (Y/N)___ Date Extracted: 06/29/94

ncentrated Extract Volume: 1000.0 (uL) Date Analyzed: 07/21/94

jection Volume: 2.0 (uL) Dilution Factor: 1.0

Cleanup: (Y/N) N pH: ____

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L	Q
51-28-5	2,4-Dinitrophenol	25.	U
100-02-7	4-Nitrophenol	25.	U
132-64-9	Dibenzofuran	10.	U
121-14-2	2,4-Dinitrotoluene	10.	U
84-66-2	Diethylphthalate	10.	U
7005-72-3	4-Chlorophenyl-phenylether	10.	U
86-73-7	Fluorene	10.	U
100-01-6	4-Nitroaniline	25.	U
534-52-1	4,6-Dinitro-2-methylphenol	25.	U
86-30-6	N-Nitrosodiphenylamine (1)	10.	U
101-55-3	4-Bromophenyl-phenylether	10.	U
118-74-1	Hexachlorobenzene	10.	U
87-86-5	Pentachlorophenol	25.	U
85-01-8	Phenanthrene	10.	U
120-12-7	Anthracene	10.	U
86-74-8	Carbazole	10.	U
84-74-2	Di-n-butylphthalate	10.	U
206-44-0	Fluoranthene	10.	U
129-00-0	Pyrene	10.	U
85-68-7	Butylbenzylphthalate	10.	U
91-94-1	3,3'-Dichlorobenzidine	10.	U
56-55-3	Benzo(a)anthracene	10.	U
218-01-9	Chrysene	10.	U
117-81-7	bis(2-Ethylhexyl)phthalate	10.	U
117-84-0	Di-n-octylphthalate	10.	U
205-99-2	Benzo(b)fluoranthene	10.	U
207-08-9	Benzo(k)fluoranthene	10.	U
50-32-8	Benzo(a)pyrene	10.	U
193-39-5	Indeno(1,2,3-cd)pyrene	10.	U
53-70-3	Dibenz(a,h)anthracene	10.	U
191-24-2	Benzo(g,h,i)perylene	10.	U

(1) - Cannot be separated from diphenylamine

1F

EPA SAMPLE NO.

SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

503__

Name: ICM, Inc. Contract: A60084

Code: ICM Case No.: SAS No.: SDG No.: 498__

rix: (soil/water) WATER Lab Sample ID: 190943

ple wt/vol: 1000.0 (g/mL) ML Lab File ID: I2120

vel: (low/med) LOW Date Received: 06/24/94

isture: _____ decanted: (Y/N)___ Date Extracted: 06/29/94

ncentrated Extract Volume: 1000.0 (uL) Date Analyzed: 07/21/94

ction Volume: 2.0 (uL) Dilution Factor: 1.0

Cleanup: (Y/N) N pH: ____

mber TICs found: 1 CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L

	CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
1.	- -	UNKNOWN	8.48	7.	BJ
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FORM I SV-TIC 3/90

ATTACHMENT K39

1D

PESTICIDE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

503

b Name: ICM, Inc. Contract: A60084

ab Code: ICM Case No.: SAS No.: SDG No.: 498

trix: (soil/water) WATER Lab Sample ID: 190943

mple wt/vol: 1050.0 (g/mL) ML Lab File ID: 01253

Moisture: _____ decanted: (Y/N)___ Date Received: 06/24/94

traction: (SepF/Cont/Sonc) SEPF Date Extracted: 06/29/94

oncentrated Extract Volume: 10000.0 (uL) Date Analyzed: 07/19/94

jection Volume: 1.0 (uL) Dilution Factor: 1.0

PC Cleanup: (Y/N) N pH: 8.1 Sulfur Cleanup: (Y/N) N

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L	Q
319-84-6	alpha-BHC	.048	U
319-85-7	beta-BHC	.048	U
319-86-8	delta-BHC	.048	U
58-89-9	gamma-BHC (Lindane)	.048	U
76-44-8	Heptachlor	.048	U
309-00-2	Aldrin	.048	U
1024-57-3	Heptachlor epoxide	.048	U
959-98-8	Endosulfan I	.048	U
60-57-1	Dieldrin	.095	U
72-55-9	4,4'-DDE	.095	U
72-20-8	Endrin	.095	U
33213-65-9	Endosulfan II	.095	U
72-54-8	4,4'-DDD	.095	U
1031-07-8	Endosulfan Sulfate	.095	U
50-29-3	4,4'-DDT	.095	U
72-43-5	Methoxychlor	.48	U
53494-70-5	Endrin ketone	.095	U
7421-93-4	Endrin aldehyde	.095	U
5103-71-9	alpha-Chlordane	.048	U
5103-74-2	gamma-Chlordane	.048	U
8001-35-2	Toxaphene	4.8	U
12674-11-2	Aroclor-1016	.95	U
11104-28-2	Aroclor-1221	1.9	U
11141-16-5	Aroclor-1232	.95	U
53469-21-9	Aroclor-1242	.95	U
12672-29-6	Aroclor-1248	.95	U
11097-69-1	Aroclor-1254	.95	U
11096-82-5	Aroclor-1260	.95	U

1

INORGANIC ANALYSES DATA SHEET

EPA SAMPLE NO.

503

ab Name: ICM Contract: A60084

b Code: Case No.: SAS No.: SDG No.: 498

trix (soil/water): WATER Lab Sample ID: 190943

vel (low/med): LOW Date Received: 06/24/94

Solids: 0.0

Concentration Units (ug/L or mg/kg dry weight): UG/L

CAS No.	Analyte	Concentration	C	Q	M
7429-90-5	Aluminum	34.6	U		P
7440-36-0	Antimony	29.8	U		P
7440-38-2	Arsenic	1.6	U		F
7440-39-3	Barium	0.40	U		P
7440-41-7	Beryllium	0.30	U		P
7440-43-9	Cadmium	1.9	U		P
7440-70-2	Calcium	28.9	B		P
7440-47-3	Chromium	2.8	U		P
7440-48-4	Cobalt	4.6	U		P
7440-50-8	Copper	4.2	U		P
7439-89-6	Iron	7.2	B		P
7439-92-1	Lead	0.92	U		F
7439-95-4	Magnesium	29.4	U		P
7439-96-5	Manganese	4.4	U		P
7439-97-6	Mercury	0.10	U		CV
7440-02-0	Nickel	8.1	U		P
7440-09-7	Potassium	536	U		P
7782-49-2	Selenium	1.4	U	W	F
7440-22-4	Silver	2.7	U		P
7440-23-5	Sodium	71.0	B		P
7440-28-0	Thallium	1.6	U		F
7440-62-2	Vanadium	2.1	U		P
7440-66-6	Zinc	1.3	U		P
	Cyanide	10.0	U		AS

lor Before: COLORLESS Clarity Before: CLEAR Texture:

lor After: COLORLESS Clarity After: CLEAR Artifacts:

ments:
SEE CASE NARRATIVE FOR CYANIDE COLOR/CLARITY INFORMATION.

1A

VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

504__

b Name: ICM, Inc. Contract: A60084

b Code: ICM Case No.: SAS No.: SDG No.: 498__

atrix: (soil/water) WATER Lab Sample ID:

mple wt/vol: 5.000 (g/mL) ML Lab File ID: C0834

evel: (low/med) LOW Date Received: 06/24/94

Moisture: not dec._____ Date Analyzed: 07/03/94

Column: SP1000 ID: 2.00 (mm) Dilution Factor: 1.0

l Extract Volume: _____ (uL) Soil Aliquot Volume: _____ (uL)

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L	Q
74-87-3	Chloromethane	10.	U
74-83-9	Bromomethane	10.	U
75-01-4	Vinyl Chloride	10.	U
75-00-3	Chloroethane	10.	U
75-09-2	Methylene Chloride	10.	U
67-64-1	Acetone	10.	U
75-15-0	Carbon Disulfide	10.	U
75-35-4	1,1-Dichloroethene	10.	U
75-34-3	1,1-Dichloroethane	10.	U
540-59-0	1,2-Dichloroethene (total)	10.	U
67-66-3	Chloroform	10.	U
107-06-2	1,2-Dichloroethane	10.	U
78-93-3	2-Butanone	10.	U
71-55-6	1,1,1-Trichloroethane	10.	U
56-23-5	Carbon Tetrachloride	10.	U
75-27-4	Bromodichloromethane	10.	U
78-87-5	1,2-Dichloropropane	10.	U
10061-01-5	cis-1,3-Dichloropropene	10.	U
79-01-6	Trichloroethene	10.	U
124-48-1	Dibromochloromethane	10.	U
79-00-5	1,1,2-Trichloroethane	10.	U
71-43-2	Benzene	10.	U
10061-02-6	trans-1,3-Dichloropropene	10.	U
75-25-2	Bromoform	10.	U
108-10-1	4-Methyl-2-Pentanone	10.	U
591-78-6	2-Hexanone	10.	U
127-18-4	Tetrachloroethene	10.	U
79-34-5	1,1,2,2-Tetrachloroethane	10.	U
108-88-3	Toluene	10.	U
108-90-7	Chlorobenzene	10.	U
100-41-4	Ethylbenzene	10.	U
100-42-5	Styrene	10.	U
1330-20-7	Xylene (total)	10.	U

EPA SAMPLE NO.

504__

VOLATILE ORGANICS ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

Lab Name: ICM, Inc. Contract: A60084

Lab Code: ICM Case No.: SAS No.: SDG No.: 498__

Matrix: (soil/water) WATER Lab Sample ID:

Sample wt/vol: 5.000 (g/mL) ML Lab File ID: C0834

Level: (low/med) LOW Date Received: 06/24/94

% Moisture: not dec._____ Date Analyzed: 07/03/94

GC Column: SP1000 ID: 2.00 (mm) Dilution Factor: 1.0

Soil Extract Volume: _____ (uL) Soil Aliquot Volume: _____ (uL)

Number TICs found: 0 CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L

	CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
1.					
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ATTACHMENT L

State of New Jersey
DEPARTMENT OF ENVIRONMENTAL PROTECTION

HRISTINE TODD WHITMAN
Governor

ROBERT C. SHINN, JR.
Commissioner

SEP 2 1 1994

MEMORANDUM

TO: Frank Sorce
Site Assessment Section

THROUGH: Greg Toffoli, Section Chief GT for GT 9/21/94
Joseph Sanguiliano JS 9/21/94
Quality Assurance Section
Bureau of Environmental Measurements and Quality Assurance

FROM: Dr. Winnie Chu
Quality Assurance Section WC 9/20/94
Bureau of Environmental Measurements and Quality Assurance

SUBJECT: Quality Assurance Data Review -- Site Name: **VIP Drycleaners, Morristown**. Samples were analyzed by Industrial Corrosion Management, Inc., Randolph, New Jersey according to Contract X-26174 task IV deliverables. The reviewed samples were:

Field ID	Lab ID	VTSR	Matrix
504/Trip Blank	190944	6/24/94	Aqueous
503/Field Blank-bailer	190943	6/24/94	Aqueous
498	190939	6/24/94	Aqueous
499	190940	6/24/94	Aqueous
501	190941	6/24/94	Aqueous
502	190942	6/24/94	Aqueous

The Quality Assurance Section, Bureau of Environmental Measurements and Quality Assurance, Division of Publicly Funded Site Remediation has reviewed the above referenced six (6) samples according to NJDEP CLP deliverables requirements. The samples were analyzed according to CLP SOWs OLM01.8 for TCL organics and ILM03.0 for inorganics, which included Target

ATTACHMENT L1

Analytes List (TAL) metals and total cyanides. A detailed data validation report is available for your review. Specific comments are provided below.

The analytical data reported (after several resubmissions by the laboratory) are acceptable with those exceptions noted below. Please refer to the attached "Target and Nontarget (TIC) Analyte Data Summary List" for individual samples and analytical results instead of the data reported on the Form I's in the original data package.

General Comments

The laboratory resubmitted the corrected Form I's, i.e., "organic analysis data sheet" (OADS) for many samples due to errors in the mass spectra positive/negative identifications in the VOA fraction. However, the laboratory neglected to initial/date these resubmitted corrections.

VOA Fraction

The analytical data reported are acceptable after the above mentioned resubmissions by the laboratory.

BNA Fraction and **Pesticide/ Aroclor Fractions**

The analytical data reported are acceptable.

Inorganics

Certain analytes are qualified because of the QA/QC outliers in post-digestion spike recoveries from Furnace AA analyses (footnotes 3 and 5). Please refer to the specific footnotes in the attachment for the affected analytes.

If you have any questions concerning this review, please contact this office at 3-0752.

attachment

c. William Lowry, BEMQA

ATTACHMENT L2

TARGET & NON-TARGET (TIC) ANALYTE DATA SUMMARY

TE NAME: VIP Drycleaners, Morristown SAMPLING DATE: 6/23/94

AB NAME: Industrial Corrosion Management, Inc. SAMPLE MATRIX: AQUEOUS, ug/L

FRACTION	SAMPLE ID	ANALYTE	METHOD BLANK CONC	LAB REPORT CONC	QA REPORT CONC	QA DECISIONS	FOOTNOTE
Inorganics	Field Blank	Calcium	35J	29J	29JB	negate	1
		Iron	42J	7J	7JB	negate	1
		Sodium	48J	71J	71JB	negate	1
Inorganics	498	Aluminum	42J	5070	5070		
		Arsenic	U	2J	2J	qualify	2,3
		Barium	U	119J	119J	qualify	2
		Calcium	35J	112000	112000		
		Chromium	U	10	10		
		Copper	U	19J	19J	qualify	2
		Iron	42J	10700	10700		
		Lead	U	6	6		
		Magnesium	U	49500	49500		
		Manganese	U	260	260		
		Potassium	U	3850J	3850J	qualify	2
		Sodium	48J	68800	68800		
		Thallium	U	2J	2J	qualify	2,3
		Vanadium	U	23J	23J	qualify	2
		Zinc	U	47	47		
		Cyanide	U	20	20		

ATTACHMENT L3

TARGET ANALYTE DATA SUMMARY

E NAME: VIP Drycleaners, Morristown

SAMPLING DATE: 6/23/94

AB NAME: Industrial Corrosion Management, Inc.

SAMPLE MATRIX: AQUEOUS, ug/L

FRACTION	SAMPLE ID	ANALYTE	METHOD BLANK CONC	LAB REPORT CONC	QA REPORT CONC	QA DECISIONS	FOOTNOTE
Inorganics	499	Aluminum	42J	114000	114000		
		Arsenic	U	6J	6J	qualify	2,3
		Barium	U	801	801		
		Beryllium	U	7	7		
		Calcium	35J	138000	138000		
		Chromium	U	208	208		
		Cobalt	U	93	93		
		Copper	U	312	312		
		Iron	42J	215000	215000		
		Lead (X4)	U	115	115		
		Magnesium	U	75600	75600		
		Manganese	U	6110	6110		
		Nickel	U	961	961		
		Potassium	U	14900	14900		
		Selenium	U	8.5 S	8.5 S		4
		Sodium	48J	108000	108000		
		Thallium	U	3J	3J	qualify	2,3
		Vanadium	U	361	361		
		Zinc	U	745	745		

ATTACHMENT L4

TARGET ANALYTE DATA SUMMARY

SITE NAME: VIP Drycleaners, Morristown

SAMPLING DATE: 6/23/94

LAB NAME: Industrial Corrosion Management, Inc.

SAMPLE MATRIX: AQUEOUS, ug/L

FRACTION	SAMPLE ID	ANALYTE	METHOD BLANK CONC	LAB REPORT CONC	QA REPORT CONC	QA DECISIONS	FOOTNOTE
Inorganics	501	Aluminum	42J	724	724		
		Barium	U	181J	181J	qualify	2
		Cadmium	U	3J	3J	qualify	2
		Calcium	35J	94100	94100		
		Copper	U	5J	5J	qualify	2
		Iron	42J	2190	2190		
		Lead	U	2J	2J	qualify	2
		Magnesium	U	33400	33400		
		Manganese	U	724	724		
		Potassium	U	11600	11600		
		Sodium	48J	50600	50600		
		Vanadium	U	5J	5J	qualify	2
		Zinc	U	37	37		
Inorganics	502	Aluminum	42J	715	715		
		Barium	U	179J	179J	qualify	2
		Calcium	35J	93300	93300		
		Copper	U	5J	5J	qualify	2
		Iron	42J	2280	2280		
		Lead	U	1J	1J	qualify	2
		Magnesium	U	33200	33200		
		Manganese	U	717	717		
		Potassium	U	12000	12000		
		Selenium	U	2J	2J	qualify	2,5
		Sodium	48J	50500	50500		
		Thallium	U	UJ	UJ	qualify	3
		Vanadium	U	5J	5J	qualify	2
		Zinc	U	29	29		

ATTACHMENT L5

TARGET & NON-TARGET (TIC) ANALYTE DATA SUMMARY

E NAME: **VIP Drycleaners, Morristown**

SAMPLING DATE: 6/23/94

AB NAME: Industrial Corrosion Management, Inc.

SAMPLE MATRIX: AQUEOUS, ug/L

TE: Only those nontarget compounds that require QAS action are provided below.

FRACTION	SAMPLE ID/DF	ANALYTE	METHOD BLANK CONC	LAB REPORT CONC	QA REPORT CONC	QA DECISIONS	FOOTNOTE
BNA	Field Blank	1 TIC with "B" qualifier - negated.				negate	1
BNA	498	3 TICs-All acceptable except those with "B" qualifiers are negated.					
BNA	499	Diethyl phthalate	1J	0.8JB	0.8JB	negate	1
		10 TICs-All acceptable except those with "B" qualifiers are negated.					
BNA	501	bis(2-Ethylhexyl)phthalate	10U	3J	3J	qualify	2
		11 TICs-All acceptable.					
BNA	502	bis(2-Ethylhexyl)phthalate	10U	3J	3J	qualify	2
		16 TICs-All acceptable.					

ATTACHMENT L6

TARGET & NON-TARGET (TIC) ANALYTE DATA SUMMARY

E NAME: VIP Drycleaners, Morristown

SAMPLING DATE: 6/23/94

B NAME: Industrial Corrosion Management, Inc.

SAMPLE MATRIX: AQUEOUS, ug/L

OTE: Only those nontarget compounds that require QAS action are provided below.

FRACTION	SAMPLE ID/DF	ANALYTE	METHOD BLANK CONC	LAB REPORT CONC	QA REPORT CONC	QA DECISIONS	FOOTNOTE
VOA	Trip Blank	Methylene Chloride	10U	2J	2J	qualify	2
		Acetone	10U	18	18		
		No TIC.					
VOA	Field Blank	Methylene Chloride	10U	2J	2J	negate	6
		Acetone	10U	15	15J	negate	6
		No TIC.					
VOA	498	Tetrachloroethene	10U	4J	4J	qualify	2
		No TIC.					
VOA	499	Acetone	10U	12	12J	negate	6
		Tetrachloroethene	10U	30	30		
		No TIC.					
VOA	501	Vinyl Chloride	10U	120	120		
		Chloroethane	10U	6J	6J	qualify	2
		1,1-Dichloroethene	10U	2J	2J	qualify	2
		1,2-Dichloroethene (total)	10U	820E	820E	qualify	7
		Trichloroethene	10U	430E	430E	qualify	7
		Tetrachloroethene	10U	1700E	1700E	qualify	7
		No TIC.					
VOA	501DL/20	1,2-Dichloroethene (total)	10U	730D	730D		8
		Trichloroethene	10U	390D	390D		8
		Tetrachloroethene	10U	2600D	2600D		8
		No TIC.					

ATTACHMENT L7

TARGET & NON-TARGET (TIC) ANALYTE DATA SUMMARY

TE NAME: **VIP Drycleaners, Morristown** SAMPLING DATE: 6/23/94

AB NAME: Industrial Corrosion Management, Inc. SAMPLE MATRIX: **AQUEOUS, ug/L**

OTE: Only those nontarget compounds that require QAS action are provided below.

FRACTION	SAMPLE ID/DF	ANALYTE	METHOD BLANK CONC	LAB REPORT CONC	QA REPORT CONC	QA DECISIONS	FOOTNOTE
VOA	502	Vinyl Chloride	10U	120	120		
		Chloroethane	10U	7J	7J	qualify	2
		1,1-Dichloroethene	10U	2J	2J	qualify	2
		1,2-Dichloroethene (total)	10U	800E	800E	qualify	7
		Chloroform	10U	1J	1J	qualify	2
		1,2-Dichloropropane	10U	2J	2J	qualify	2
		Trichloroethene	10U	430E	430E	qualify	7
		Tetrachloroethene	10U	1700E	1700E	qualify	7
		No TIC.					
VOA	502DL/20	1,2-Dichloroethene (total)	10U	820D	820D		8
		Trichloroethene	10U	420D	420D		8
		Tetrachloroethene	10U	3000D	3000D		8
		No TIC.					

ATTACHMENT L8

TARGET ANALYTE DATA SUMMARY

TE NAME: **VIP Drycleaners, Morristown** SAMPLING DATE: 6/23/94

B NAME: Industrial Corrosion Management, Inc. SAMPLE MATRIX: **AQUEOUS, ug/L**

FRACTION	SAMPLE ID/DF	ANALYTE	METHOD BLANK CONC	LAB REPORT CONC	QA REPORT CONC	QA DECISIONS	FOOTNOTE
Pesticide/Arochlor	Field Blank	None detected					
Pesticide/Arochlor	498	None detected					
Pesticide/Arochlor	499	None detected					
Pesticide/Arochlor	501	None detected					
Pesticide/Arochlor	502	None detected					

ATTACHMENT L9

FOOTNOTES:

1. The value reported in the sample is less than or equal to 3x the value in the Method Blank/ Preparation Blank. It is the policy of NJDEP-DPFSR to negate the reported value due to probable foreign laboratory contamination unrelated to the actual sample. The end-user is alerted that a reportable quantity of the analyte was detected. When the sample was diluted prior to analysis and/ or the value reported was corrected to dry weight basis, as indicated by the dilution factor and/ or %solids, the comparison to the "Blanks" was prior to these corrections.

2. The concentration of this analyte was less than the CRQL/CRDL but greater than the instrument detection limit (IDL). The concentration is considered estimated since the value obtained is at the low end of the instrument performance. When the sample was diluted prior to analysis and/ or the value reported was corrected to dry weight basis, as indicated by the dilution factor and/ or %solids, the comparison to the "Blanks" was prior to these corrections.

3. The reported metal value is qualified (J positive and UJ for non-detects) because the post-digestion spike recovery for Furnace AA analysis is <u>below</u> the control limit while the sample absorbance is less than 50 percent of the spike absorbance.

4. The laboratory used the Method of Standard Addition (MSA) analysis for this analyte.

5. The reported positive metal value is qualified (J positive) because the post-digestion spike recovery for Furnace AA analysis is <u>above</u> the control limit while the sample absorbance is less than 50 percent of the spike absorbance.

6. The value reported in the sample is less than or equal to 3x the value in the Trip Blank. It is the policy of NJDEP-DPFSR to negate the reported value due to probable foreign contamination unrelated to the actual sample. The end-user is alerted that a reportable quantity of the analyte was detected. When the sample was diluted prior to analysis and/ or the value reported was corrected to dry weight basis, as indicated by the dilution factor and/ or %solids, the comparison to the "Blanks" was prior to these corrections.

7. The compounds exceeds the calibration range of the instrument and it is indicated with the "E" qualifier.

8. The CLP program requires dilutions to be indicated with the "D" qualifier. The comparison to the "Blanks" or the CRQL/ CRDL was prior to the dilution corrections.